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NUTRITION IN RELATION TO EYE FUNCTION[1]

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ANY complex organ of the body, such as the eye, must of necessity be influenced in its function by the state of nutrition of the body as a whole. Certain nutritional deficiencies, however, are apt to affect one organ more than another. The function of the eye is affected by several different types of nutritional disturbances. The specificity of some of these nutritional elements in tissue function is admirably illustrated by the characteristic nature of the ocular disturbances related to each.

There is a tendency to think of vitamin deficiencies in connection with any pathology of the eye, but this discussion deals with mineral, carbohydrate, and protein metabolism as well as vitamins in relation to eye function. Yes, all of these factors have some role to play in this intricate mechanism—the eye.

VITAMIN DEFICIENCIES

Vitamin A. Night blindness is now well recognized as an early symptom of carotene or vitamin A deficiency. The retina is apparently the first part of the eye to give evidence of abnormality when the visual purple and visual violet fail to regenerate in adequate amounts. Another manifestation of this same deficiency appearing somewhat later, especially in young animals or children, is the keratinization of the cornea. Still later the lens may develop opacities. According to some authorities normal light-dark adaptation may be restored in a few hours after a massive dose of vitamin A is administered. Children or animals suffering from xerophthalmia recover in a few days when the diet is corrected, but lenticular injuries caused by long standing deficiency may never disappear. Vitamin A deficiency in young calves and swine causes a degeneration of the optic nerve with the loss of vision which is permanent. Thus the type of lesion and the possibility and rate of recovery may vary, but they tend to be characteristic of the species and of the degree and duration of the vitamin A deficiency.

Riboflavin. One of the early evidences of riboflavin deficiency in rats was loss of hair around the eyes, and

[1] Presented before the Nutrition and Diet Therapy Session, American Dietetic Association, New York, October 22, 1940.

inflammation. Later, Day and his coworkers observed lenticular opacities developing when this deficiency was prolonged. Riboflavin could prevent any of these symptoms but could not cure a cataract once formed. Now in 1940, Sydenstricker, Sebrell *et al.*, find that corneal lesions in humans respond to therapy with riboflavin. Various ocular manifestations not formerly recognized as nutritional in origin have been treated successfully in this way. Corneal lesions and congestion with itching and burning and mild photophobia are the most frequent symptoms. Striking as are these recoveries from ariboflavinosis, if the eye pathology is due to some other cause than this specific deficiency, massive doses can neither prevent nor cure the condition. For instance, cataract caused by galactose injury is not delayed in the least by massive doses of riboflavin. This factor is specific only for conditions caused by the riboflavin deficiency.

Ascorbic Acid. Enthusiasm for relating histologic change and chemical composition to various types of pathology sometimes leads into blind alleys. The relation of ascorbic acid to cataract may be a false lead. When chemical methods for determination of ascorbic were developed, various tissues and organs, normal and abnormal, were analyzed to discover any possible clues to its physiologic function. When eye tissues were studied normal lenses proved to be rich in ascorbic acid but cataractous lenses contained little or none. Immediately, massive doses of ascorbic acid were prescribed in the treatment of cataract. A few favorable results were reported prematurely and then a mass of negative results followed. Cataractous changes were not prevented or delayed by massive doses, according to most authorities. Possibly the loss of ascorbic acid in a cataractous lens is itself an inevitable result of the degenerative change and not a cause of it. Therefore such a finding may easily lead to wrong conclusions unless carefully interpreted.

MINERAL METABOLISM

Calcium. The fact that the calcium content of the cataractous lens is greatly increased, together with the finding that, clinically, cataract is frequently associated with disturbances of calcium metabolism, has given rise to the idea that calcium may be an important etiologic factor in cataractous conditions. The increased calcium content of cataractous lenses may be due simply to local deposition of calcium in an area where degeneration has already taken place. For instance, lenses from rats in which cataract had been produced by lactose feeding showed a threefold increase in calcium. Calcification of damaged tissue elsewhere in the body is not uncommon.

Cataract also occurs in association with tetany due to hypocalcemia. Clinically, cataract occurs after parathyroidectomy and has been produced experimentally in rats and dogs by the same means. The present theory is that a general disturbance in ionic equilibrium and hydrogen-ion concentration may produce degenerative changes in the lens, leading to cataract.

Sodium. Rats maintained on sodium-deficient rations for as long as 6 to 8 weeks begin to show corneal changes. As the condition progresses, other external parts of the eye become congested

and inflamed. According to McCollum and his associates, the lesions differ in almost all details from those of vitamin A-deficient rats. There is no diminution in secretion of tears, no keratinization, but there is corneal ulceration which is not characteristic of vitamin A deficiency.

Experiments still in progress in our laboratory are concerned with the effect of sodium chloride upon lactose and galactose metabolism as it relates to cataract.

That sodium chloride may have some influence on carbohydrate metabolism is also suggested by recent work on diabetic children.

CARBOHYDRATE METABOLISM

Glucose (*Sucrose*). Unlike the vitamin and mineral stories, the carbohydrate story is one of tolerance rather than of deficiency. Animals as well as man are limited in the amount and type of carbohydrate which can be ingested at one time without overtaxing the body's ability to cope with it. Human diabetics have a limited tolerance for glucose and develop high blood sugar when they exceed their tolerance. Vision is often blurred during periods of high blood sugar because of disturbed refraction in the eye fluids. Older diabetics frequently develop cataract—although there is now some doubt as to whether there is such a thing as a true diabetic cataract. Certainly it was more common in the days before the blood sugar level could be controlled by insulin. Probably a controlled diabetic is no more likely to develop cataract today, than a normal person. Dogs which have been maintained in a diabetic condition over long periods of time frequently have cataract.

The first experimental cataract ever reported was produced in frogs by feeding them a concentrated sucrose solution. S. Wier Mitchell reported this in 1860 but little notice seems to have been taken of the observation at the time.

Galactose (*Lactose*). Rats have a limited tolerance for the sugar, galactose, which is evident when this sugar is derived from the digestion of a large amount of lactose. It is even more striking when the single sugar, galactose, is fed as such in the rations. Blood sugars as high as 250–300 mg. are common (the normal level is around 120 mg. per 100 cc. blood). Lenticular changes develop rapidly in rats with such high blood galactose, early changes being visible with an ophthalmoscope within 3 or 4 days. Mature cataracts develop in from 16 to 24 days when 25 per cent galactose is fed in an otherwise adequate ration. No other pathologic tissue change of any description is evident in these rats. There is no vitamin deficiency in the picture nor do massive doses of vitamins have any effect whatsoever in preventing or delaying cataract due to galactose. The amount or type of fat in the ration has no effect upon the galactose injury. To be sure, there is a variation in susceptibility of rats from different strains and even from different litters, but littermate-controlled experiments avoid wrong interpretations.

Xylose. Soon after the discovery of galactose as a cataract-producing agent, other sugars were investigated and the only one which caused even the slightest change in rat lenses was xylose. This was negligible compared with galactose and was so reported at the time. Re-

cently, Day *et al.* have reported xylose to be just as cataractogenic as galactose. Repetition of our earlier experiments using exactly the same type of xylose from the same source as that used by Day confirms our earlier observations and fails to confirm his. Whether difference in strain can be responsible for the apparent difference between the two colonies in susceptibility to xylose cataract, is a question. Our experiments were conducted on rats extremely sensitive to galactose injury.

NITROGEN METABOLISM

Recent work in our laboratory has demonstrated that protein or some nitrogenous derivative incorporated in the ration has a significant influence upon the degree of injury due to galactose. Inadequate protein (5 per cent) hastens the development of cataract; higher levels of protein inhibit the lenticular changes. At the high level of 45 per cent protein, relatively few cataracts develop. Thus the specific action of protein deserved further study.

The possible significance of simple nitrogenous compounds was also investigated. Urea and choline, respectively, were used to furnish varying levels of nitrogen supplementing 5 per cent protein as casein in a 25 per cent galactose ration. There was no evidence that these forms of nitrogen exerted any protective action against galactose injury. Two amino-acids, cystine and methionine, have often been suggested as of possible significance in the metabolism of the lens. These were incorporated at suitable levels in a galactose ration in testing their protective action. Results were negative with methionine, and questionable with cystine. These two sulfur-containing amino-acids were not so protective, at least, as proteins containing comparable amounts of cystine or methionine. A cataract resulting from a tryptophane deficiency has been reported in the literature, but there is no indication of a tryptophane deficiency in any of the experiments concerned with galactose.

Eight different natural food proteins were fed at a 15 per cent level in galactose rations. Not much difference in protective action was noted except that egg albumin was slightly more protective than the others—casein, lactalbumin, beef muscle, beef liver, codfish, soy bean and gelatin. Certainly the degree of protective action was not in the same order as their growth-promoting value. This finding led to further inquiry into the nature of the protective factor in proteins.

It is well known that when certain proteins are exposed to long continued dry heating, they are so altered as to be less adequate for growth of experimental animals. Four protein foods heated for 96 hours at 125°C. were fed at a 15 per cent protein level in a 25 per cent galactose ration. The growth value of these proteins was damaged by heat in the decreasing order: gluten, casein, fibrin, egg albumin. The loss of cataract-inhibiting action was in decreasing order: casein, egg albumin, gluten, fibrin. Thus again it was demonstrated that the nitrogenous factors essential for growth are not the same as those protecting the lens from injury.

Further evidence along the same line was furnished by another study conducted jointly by the nutrition and chemistry departments. Treatment of casein with nitrous acid (deaminizing)

so changes it as to make it entirely inadequate for growth. Fed as two-thirds of the total protein of the ration, with plain casein supplying the remaining one-third, rats survive but grow poorly. Contrary to expectation cataract development was inhibited more by deaminized casein than by plain casein.

Summary, nutrition in relation to eye function

	EXPERIMENTAL		CLINICAL	
	Deficiency	Response to vitamin	Deficiency	Response to vitamin
Vitamins				
Vitamin A (Carotene)	Xerophthalmia Keratomalacia Optic nerve degeneration	Cured in a few days or prevented Prevented	Xerophthalmia Nyctalopia (night blindness)	Cured or prevented Relieved or prevented
Riboflavin	Cataract Conjunctivitis	Prevented Cured or prevented	Corneal lesions Keratitis	Relieved in most cases
Ascorbic acid	No striking eye changes in scurvy	None	Loss in cataractous lens not due to deficiency	No inhibition with large doses

	EXPERIMENTAL EVIDENCE	CLINICAL IMPLICATIONS
Minerals		
Calcium	Calcium content of lens increased in galactose or lactose cataract; cataract associated with hypocalcemia of tetanus	Increased calcium in cataractous lenses without increased intake of calcium; serum calcium normal
Sodium	Deficiency—inflammation and edema of external eye tissues, corneal ulcers	?
Carbohydrates		
Glucose (Sucrose)	Cataract in older diabetic dogs; sucrose cataract in frogs (1859)	Diabetic or senile cataract? (High carbohydrate diet of elderly people)
Galactose (Lactose)	Cataract in rats fed rations containing 15–25% galactose, 60–70% lactose	?
Xylose	Degree of injury variable; cataract in rats reported	?
Nitrogenous Factors		
Protein or Derivatives	High protein inhibits, low protein aggravates galactose cataract; amino-acid or derivative may protect	Senile cataract? (Low protein diet of elderly people)

When the two forms of casein were hydrolyzed and fractionated, the dicarboxylic and diamino-acid fraction seemed to be more protective than any other fraction. Further work along this line is still in progress.

Can it be that some amino-acid or its derivative has the specific function of protecting the capsular membrane of the lens from injury? The fact that few of the nitrogenous substances investigated have significantly lowered the level of blood sugar must lead to the interpretation that they are protective in the presence of high blood galactose. There may eventually be some clinical significance to this finding if a factor can be found which will protect the capsule of the lens against injury from abnormal substances in the blood stream or eye fluids. If the theory that galactose injures the capsule and thus changes its permeability to electrolytes is sound, this protective action of a protein substance might also be local and work by increasing the resistance of the capsular membrane to injury. In any case, it is difficult to understand why there is no general systemic or other tissue evidence of this unique interrelationship.

These experimental speculations lead a step further when we consider the regional and age incidence of human cataract. It is more common in India than in any other part of the world. There, also, people exist at extremely low economic levels on high-carbohydrate, low-protein diets. Is a natural susceptibility to cataract or an unknown causal factor possibly aggravated by a riboflavin or a protein deficiency? In our own country senile cataract is the most common type. Can there possibly be a relationship between the dietary habits of older people (decreased food consumption, low protein, and limited vitamins) and the development of lenticular opacities? There is no evidence that senile cataract is nutritional in origin. That is one of the gaps in scientific knowledge yet to be filled. Perhaps these implications are not even justified but the number of nutritional factors bearing upon eye function which have been reviewed here cannot help but lead to the question: How many more functional disturbances of the eye may be nutritional in origin?

REFERENCES

General

McCollum, E. V., Orent-Keiles, E., and Day, H. G.: The Newer Knowledge of Nutrition. New York: The Macmillan Company, 1939.

Bruner, A. B.: Hygeia, p. 592, July 1936.

Bourne, M. C.: Physiol. Rev. 17: 1–27, 1937.

Vitamin A and Night Blindness

Wald, G., Jeghers, H., and Arminio, J.: Am. J. Physiol. 123: 732–746, 1938.

Steffens, L. F., Blair, H. L., and Sheard, C.: Proc. Staff Meet., Mayo Clin. 14: 698–704, 1939.

Hecht, S., and Mandelbaum, J.: J. A. M. A. 112: 1910–16, 1939.

Riboflavin

Day, P. L., Darby, W. J., and Cosgrove, K. W.: J. Nutrition 15: 83–90, 1938.

Sydenstricker, V. P., Sebrell, W. H., Cleckley, H. M., and Kruse, H. D.: J. A. M. A. 114: 2437–2445, 1940.

Kruse, H. D., Sydenstricker, V. P., Sebrell, W. H., and Cleckley, H. M.: Pub. Health Rep. 55: 157–168, 1940.

Johnson, L. V., and Eckardt, R. E.: Arch. Ophth. 23: 899–907, 1940.

Mitchell, H. S., and Cook, G. M.: Proc. Soc. Exper. Biol. & Med. 39: 325–326, 1938.

Ascorbic Acid

Hawley, E. E., and Pearson, O.: Arch. Ophth. 19: 959–967, 1938.

URBANEK, J.: Klin. Monatsbl. f. Augenh. 101: 670, 1938.

Calcium

EVANS, E. I., AND KERN, R.: Am. J. Ophth. 14: 1029, 1931.

KIRBY, D. B.: Arch. Ophth. 5: 856, 1931.

MITCHELL, H. S., AND DODGE, W. M.: J. Nutrition 9: 37–49, 1935.

Carbohydrates

MITCHELL, S. WIER: Am. J. M. Sc. 39: 106, 1860.

CHAIKOFF, I. L., AND LACHMAN, G. S.: Proc. Soc. Exper. Biol. & Med. 31: 237–241, 1933.

MITCHELL, H. S.: Proc. Soc. Exper. Biol. & Med. 32: 971–973, 1935.

YUDKIN, A. M., AND ARNOLD, C. H.: Proc. Soc. Exper. Biol. & Med. 32: 836–837, 1935.

MITCHELL, H. S., AND COOK, G. M.: Arch. Ophth. 19: 22–33, 1938.

DARBY, W. J., AND DAY, P. L.: Proc. Soc. Exper. Biol. & Med. 41: 507–508, 1939.

DARBY, W. J., AND DAY, P. L.: J. Biol. Chem. 133: 503–509, 1940.

Nitrogenous Factors

MITCHELL, H. S., AND COOK, G. M.: Proc. Soc. Exper. Biol. & Med. 36: 806–808, 1937.

SALIT, P. W.: Acta ophth. 17: 81, 1939.

MITCHELL, H. S., COOK, G. M., AND HENDERSON, M. D.: Arch. Ophth. 24: 990, 1940.

HENDERSON, M. D., AND MITCHELL, H. S.: (in press) J. Nutrition 1941.

MOORE, E. L., HENDERSON, M. D., MITCHELL, H. S., AND RITCHIE, W. S.: (in press) J. Nutrition 1941.

Personnel Problems

The survey showed that hospitals are still giving very little attention to personnel problems. Procedures used in hiring and firing are very weak and unscientific. Of all the hospitals who returned their questionnaires, only six (of the larger ones) stated that they had personnel directors as such. In these hospitals, the rate of turnover was about 10 per cent lower than in other hospitals. The committee estimated that approximately 2 per cent of the hospitals of the American Hospital Association have adequate personnel records.—*Walter, F. J., Survey of labor turnover in hospitals, Hospitals, December, 1940.*

Hospital Dietary Service Today

One nurse wrote this note: "Five years ago many patients were dissatisfied with the meals and appearance of the trays. The diets are now well balanced and served more attractively." The routine mushy invalid diet is gone. A full tray is a very liberal diet such as one is accustomed to in his own home. Each patient in the hospital is served an individual tray which comes directly from the hospital diet kitchen. Every morning a staff of dietitians interview each private patient, and the supervisors of all wards and two-bed floors. Special diets, food desires, complaints or requested changes are obtained individually.—*Saltzstein, H. C., Hospital bed care ten years ago and now, Hospitals, December, 1940.*

THE NEED FOR BETTER NUTRITION DURING PREGNANCY AND LACTATION[1]

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IN RECENT years the efforts of our government to bring about marked improvements in maternal and child hygiene, particularly through the Children's Bureau, have helped to focus attention upon the fact that so far as nutrition is concerned there is no period in the development of the child more neglected than the prenatal period. It may also be stated with certainty that there is no period in life where effective and intelligent nutrition teaching would result in greater gains to national health. The reason for this is threefold. First, it would result in increased maternal benefits: namely, improved maternal health and a lowered maternal mortality. Second, it would bring about marked improvements in child health and development. Third, it would also bring about improved nutrition of the family as a whole.

It has been aptly stated (1) that we are the products of heredity and environment, and that food is the most fundamental influence in environment. Our experience in the teaching of prenatal diets during the past eight years at the Center for Research in Child Health and Development of the Harvard School of Public Health, has shown clearly that the majority of young women going through pregnancy, especially for the first time, are in a naturally receptive mood to learn not only about their own food needs in relation to those of the fetus, but also how they can best spend their food dollars wisely. It should be unnecessary to state that the only successful prenatal nutrition teaching, where the amount of money for family food is limited, considers the mother's food needs in relation to the total food budget for her family. If we fail to take advantage of the opportunities which the prenatal period affords for nutrition teaching, we are losing one of the best points of contact in improving the nutrition of the families in this nation—a very important consideration in terms of national economy as well as national defense.

Since in the time allotted it is impossible for me to discuss in any detail all aspects of the diet during pregnancy and lactation, I shall refresh your memories with regard to what are now the generally accepted requirements for optimal nutrition during the periods of pregnancy and lactation. I shall then discuss briefly a portion of these requirements in somewhat more detail and in respect to that which our experience in studying prenatal diets has taught us.

It is an accepted fact that while pregnancy and lactation are considered normal physiologic states, each makes increased nutritional demands upon the mother. We know, only too well, that digestion and absorption from the intestinal tract are often impaired in pregnancy. Thus increased nutritional needs, together with a digestive system

[1] Read before the Session on Maternal and Infant Health, American Dietetic Association, New York, October 21, 1940.

which functions below par, make careful attention to the diet at this time doubly important. The demands of the baby and the altered maternal metabolism during pregnancy and lactation result in such changes in the nutritional requirements of the mother that helpful guidance in her food habits throughout these periods is extremely important, if optimal nutrition is the desired goal. We should therefore consider seriously emphasize the fact that in this we are assuming that woman enters pregnancy in a healthy nutritional condition, but unfortunately too often this is far from the case. In such cases of suboptimal nutrition increased benefits would accrue to both mother and fetus, if the diet suggested as necessary during the last two trimesters was consumed for as much of the entire period of pregnancy as possible, the caloric intake being

TABLE 1

*A comparison of optimal daily nutritional requirements in pregnancy and lactation with the optimal normal requirements of the average woman**

	NORMAL	PREGNANCY† (4TH THROUGH 9TH MONTH)	LACTATION
Calories‡	2400	2700	3000
Protein	At least 1 gm. per kg.	100 gm. (1.5–2 gm. per kg.)	125 gm. (2 gm. per kg.)
Calcium	.7 gm.	1.5 gm.	2 gm.
Phosphorus	1.32 gm.	2 gm.	2+ gm.
Iron	15 mg.	20 mg.	15–18 mg.
Vitamin A	5000–6000 I.U.	9000 I.U.	9000 I.U.
Thiamin	1–1.5 mg.	2 mg.	2 mg.
Ascorbic acid	60 mg.§	100 mg.	100 mg.
Vitamin D	?	600–800 I.U.	600–800 I.U.
Riboflavin	1–2 mg.	?	?
Nicotinic acid	25 mg.	?	?

* Generally accepted optimal nutritional requirements according to available data.

† Assuming the changes in the first trimester to be so small as to be negligible.

‡ Energy requirements vary with activity, etc.

§ More if tissue saturation is desirable.

the means by which additional educational work may be accomplished during both the prenatal and the nursing periods so that more nearly optimal diets may become the rule rather than the exception in these periods.

Table 1 is a guide for the optimal daily nutritional requirements for the average normal woman from the fourth month to the end of pregnancy, assuming the changes during the first trimester to be so small as to be negligible. We need to carefully adjusted to the individual case. The nutritional changes necessitated by the lactation period are also stated. The average woman's normal daily nutritional requirements are indicated so that the increased dietary needs for the periods of both pregnancy and lactation are clearly seen. These increased nutritional needs together with the fact that the fetus *in utero* is to a degree parasitic, taking what it needs from the mother's blood stream in so far as

possible and to a certain extent regardless of her food intake, make it apparent that if the maternal diet is inadequate or absorption from the digestive tract below par, the mother serves at her own expense as a buffer between the inadequate food absorbed and that taken from the maternal blood stream by the developing fetus. Thus the cost to the mother in terms of demineralization, nitrogen loss, and vitamin deficiency may be large, with attendant serious consequences. The idea that the fetus maintains its nutrition in an optimal state even in the face of an inadequate maternal diet and that the mother is the only one who suffers is, in the light of recent investigations, apparently untenable.

If we analyze these increased requirements for structural and regulatory nutritional essentials, we find that because the increased need for calories during pregnancy is never more than 20 per cent above the woman's normal energy requirements and often this increase is cut down by lessened activity especially toward the end of pregnancy, it is little wonder that unless considerable attention is paid to the woman's normal food habits in relation to her diet during this period many of these needs are inadequately met. If the mother understands the nutritional requirements of pregnancy and how to meet these needs, it becomes much easier for her to select the proper foods in the lactation period when her caloric needs are higher.

The obstetrician is concerned with the limiting of weight gain during the period of pregnancy to approximately twenty pounds above normal body weight. Altogether too often in attempts to control weight in pregnancy, diets are resorted to which are dangerously inadequate in structural materials. Many an obstetrician assumes that women have a reasonable knowledge of food values and for this reason, or because of lack of time, offers inadequate and indefinite information concerning the diet for this period. A competent nutritionist attached to every prenatal clinic would prove of inestimable value. The nutritionist would explain the dietary needs at the time of a woman's first visit to a prenatal clinic, as based upon a detailed nutrition history obtained at the interview. This nutrition teaching should be followed by additional dietary advice offered as needed throughout the period of pregnancy and subsequently during the lactation period.

For the past eight years in our study of the growth and development of the normal child, mothers from the prenatal clinics of the Boston Lying-in Hospital who were in the first trimester of pregnancy were selected so that we could know the history of the child's development from early in the prenatal period. Our prenatal nutrition histories have been obtained at the time of the mother's first visit to the prenatal clinic and at as many subsequent visits as the individual case necessitated, at least once each trimester (2). These histories include a complete record of the food intake for the previous twenty-four hour period together with detailed data as to the woman's food habits in relation to those foods which we consider should be included in her daily diet: namely, milk, eggs, meat, fruits, vegetables, whole grains, butter and cod liver oil or its equivalent, as well as data concerning other foods which she is in the habit of

eating frequently. As this dietary history is taken we instruct the mother regarding the improvement of her diet, giving consideration in so far as possible to her individual food preferences and her ability to secure the necessary diet.

We need to think carefully about the approach to the woman's needs in the periods of both pregnancy and lactation, since we know that from an economic standpoint it is often a practical impossibility for her to meet such standards as have been outlined. Our experience indicates that she should be told her optimal nutrition requirements in terms of foods as economically chosen as possible and then helped to meet these needs as completely as possible. In other words, if she requires a quart of milk daily, tell her, and ask her how much of this she feels she can get and then help her to figure out from the number in the family, the income, etc., how nearly she can obtain what she needs. She will make much more effort and take much more milk if she really feels that she needs a quart than she will if she has been left on some low-cost diet plan to feel that in her case a pint or a pint and a half will do. The same is true of other essential foods. It is important to teach the optimal amounts of the foods needed and make the mother feel that the inclusion of as much of them as possible in the diet during both pregnancy and lactation is worth her effort. Government help to make these foods available to pregnant and lactating women whose family incomes do not permit their inclusion in proper amounts is worthy of consideration in terms of benefits to national health—these would far exceed the cost of the food.

Let us consider the protein requirements of pregnancy and lactation. Ideas in regard to the amount of protein needed during pregnancy have undergone considerable change in the last few years. The League of Nations Technical Commission in Nutrition (3) recommends 1.5 gm. protein daily per kilogram of body weight from the fourth month to the end of pregnancy. We have recommended to the mothers in our study group prenatal diets containing approximately 100 gm. protein daily. To restrict meat and eggs in the diet of the pregnant woman has been common medical practice and is still done to a considerable extent. The reason for this is that these protein foods have long been associated with the toxemias of pregnancy and were and still are considered by many physicians to be one of the causes of toxemia. We can state with certainty, today, that there is no satisfactory evidence that a liberal intake of protein is a cause of toxemia. On the contrary we can say definitely that there is an increased need for protein due to the growth of both maternal and fetal tissue. Nitrogen balance studies by Macy and her coworkers (4) have shown that this increased requirement for protein is due to the significant retention of nitrogen in the mother over and above that which can be attributed to the developing fetus. These workers have also drawn attention to the fact that in women the greater the retention of nitrogen in the latter part of pregnancy, the greater the likelihood of a sufficient milk supply. (It has long been known in the dairy industry that a high protein diet in the latter part of the gestation period helps produce high milk yields.) Certainly

there is plenty of evidence today to substantiate the idea of increased protein need, especially during the latter part of pregnancy and during lactation. Strauss (5) of Harvard Medical School suggests that a diet low in protein is one of the causes of toxemia. A pregnancy study by our group on 86 women at the Boston Lying-in Hospital included a number who had had toxemia at a previous pregnancy, while the rest of the group were chiefly primiparas. No case was admitted to the group after the first trimester, and the women had to promise to carry out to the best of their ability the suggestions prescribed for the prenatal period. These women were offered the best possible prenatal care so far as was known, including nutritional advice in regard to optimal prenatal diet which contained, as already stated, approximately 100 gm. protein daily. When the study was over there had been no case of toxemia within the group. It should be stated that marked restriction of protein over prolonged periods during pregnancy and lactation may result in diminished serum protein with attendant edema, negative nitrogen balance, and indirectly, anemia.

If the diet during pregnancy should supply approximately 100 gm. protein daily, attention should be given to a plan for securing it, and the needs in this respect carefully explained to the mother. This point is emphasized by the examination of 100 consecutive cases in our study group. An analysis of the first dietary history in the prenatal period revealed that 27 per cent of the women were eating diets poor in protein, 54 per cent took a diet fair in protein, 19 per cent were eating diets considered good in protein, while no diet in the entire group of 100 cases could be called excellent in its protein content.

In teaching our mothers we have emphasized the importance of including the following daily: milk (one quart), lean meat ($\frac{1}{4}$ lb. or more), eggs (one or more), and the liberal use of cheese, etc. The cost of this amount of protein food makes it beyond the reach of many women in this country today, but because of its value in pregnancy every effort should be made to obtain it. Where financial consideration does not always make it possible to obtain this amount of protein drawn largely from animal sources, less expensive sources of protein will have to be substituted and the high supplementary value of milk proteins relied upon. In a family group where the finances are limited, it will often be found that the mother will tend to give the available milk, eggs, and meat to the father and children and go without, for the most part, herself. We recommend a diet including 125 gm. protein daily during lactation. We urge our mothers, who are largely from the low middle-class income group, to use meat twice daily, two eggs daily if they wish, and at least a quart of milk in their diet throughout the nursing period. To get many women with their present poor food habits to take these recommended amounts of protein is a difficult task irrespective of the cost of such a diet, and requires the application of patient and constructive teaching throughout both periods.

In considering the requirement for calcium during pregnancy, it is generally agreed that 1.5 gm. daily is the desired optimum. Macy and her co-workers (6) through balance studies have con-

tributed to this point of view. Much recent research in relation to calcium requirement has revealed that this requirement is influenced by the woman's previous calcium intake; Macy and her co-workers (7) have shown this to be true in balance studies of women in pregnancy and lactation.

If the daily requirement for calcium is 1.5 gm., the inclusion of a quart of milk in the diet becomes a very important factor of safety. But how many pregnant women get this amount?

In 100 consecutive cases in our study, having no earlier sibling in the group, and using the first nutrition history so that we had not influenced milk intake, we find the following facts: that 45 per cent of the group took less than one pint of milk; 20 per cent, one pint; 18 per cent, one and one-half pints; and 17 per cent, at least one quart daily. In other words, nearly one-half of the group were consuming diets very poorly supplied with calcium in relation to their optimal needs, and less than one-fifth were meeting the optimal requirement. If the fetus is parasitic upon the mother for calcium, apparently then there were drains on maternal calcium reserves in at least 65 per cent of these women.

What clinical evidence is presented from our study that suggests possible damage to the fetus through lack of milk in the prenatal diet? A preliminary nutritional study of two groups of our children in relation to defective deciduous teeth, in which one group of 11 children with perfect teeth at six and one-half years of age was contrasted with a group of 12 children with the largest number of defective deciduous teeth among our entire group at three years of age, showed, as one of the striking differences, that in the group with perfect teeth (at 6½ years) the mother's prenatal diet included at least one quart of milk daily, while in the group with the largest number of defective deciduous teeth (at 3 years) the prenatal diet, in most of the cases, included one pint of milk or less per day. Of course, in any consideration of the problem of caries, many factors undoubtedly enter in, and these data are offered only as suggestive of the idea that the amount of milk (calcium and phosphorus) in the prenatal diet may be of importance to the deciduous teeth.

No special consideration need be given to phosphorus, for if the demands for protein and calcium have been met by the foods already mentioned, the requirement for phosphorus will also be ensured by these same foods.

While the iron requirement for pregnancy cannot be precisely stated, there is a definite impression that 20 mg. iron, daily, approximates the optimal requirement. This figure is given by Macy and Hunscher (8). Nutritional anemia in pregnancy is known to be altogether too common. The amount of iron suggested for the period of pregnancy is a factor of safety in the light of our present advancing knowledge in regard to availability of iron in different foods, the possibility of deficient absorption at this time, and the fact that nutrition studies make clear the frequency with which iron deficiency anemia occurs today among normal women so that many enter pregnancy with already depleted iron stores.

As is well known, the infant at birth is supposed to be supplied with a sufficient store of iron to carry it through the

early months of life. The drain upon the mother to supply the needs of the fetus, together with diets often inadequate in iron, may account for much of the anemia so common in pregnancy. Adair, Strauss, Bethell and MacKinnon, and English workers (9–13) have published evidence to substantiate these facts. Unpublished data from our own study of the relationship existing between the amount of iron in the mother's diet, her hemoglobin levels during pregnancy, and the blood levels of the baby indicate the value to both mother and baby of a diet well supplied with iron throughout the period of pregnancy. Our study also indicates that other nutritional factors, especially protein, are of importance in relation to the blood picture. In several instances a particularly low hemoglobin and red blood cell count seemed to be associated with a diet poorly supplied with protein as well as iron. The diet picture as a whole also is undoubtedly a factor. In a group of our mothers studied during pregnancy those who took a diet rated as "good" or "excellent" in iron showed a much less marked physiological drop in hemoglobin level during pregnancy than did those taking a diet considered "fair" or "poor" as to its iron content.

An interesting illustration of the effect of diet upon hemoglobin levels in the mother and infant is shown in the case of Mrs. D., one of our most cooperative mothers, whom we have followed through three pregnancies. When first seen she consumed a diet rated "fair" in iron. This was toward the end of the second trimester of her first pregnancy. She had improved her iron intake to "good" during the latter part of the first pregnancy. In the second pregnancy she took a diet rated "good to excellent" in iron and had iron medication from the sixth month to the end of that period. In her third pregnancy she received no iron medication, but had taken a diet "excellent" in iron between the two pregnancies and continued to take a diet "excellent" in food iron throughout this third pregnancy, using such foods as liver, apricots, molasses, lean meat, leafy greens, whole grain bread and cereal, etc., liberally. In each pregnancy she showed a higher hemoglobin level than at the previous pregnancy, reaching an average of 16.+ gm. hemoglobin per 100 cc. blood in the third pregnancy; her average hemoglobin during the latter part of the first pregnancy had been 12.+ gm. The comparative hemoglobin levels of the three children in the first six months of infancy likewise improved; the last child had a birth blood of 20.8 gm. hemoglobin, and a hemoglobin level at six months of 13.6 gm. as compared with a birth blood in the first child containing 17.9 gm. hemoglobin and a hemoglobin level of 12. gm. at 6 months of age. The hemoglobin levels of the mother during the second pregnancy and those of the child to six months were intermediate in value.

As previously stated, no attempt is being made in this discussion to consider all of the dietary requirements, but before we leave the minerals, it should be mentioned that in regions where goiter is endemic, attention should also be paid to the iodine content of the diet in these periods.

Referring again to the preceding table, it is apparent that the requirements for all the vitamins appear to be considerably increased in these periods.

The increased demand for vitamin A

necessitates attention to the diet in this respect. The liberal use of such foods as whole milk, butter, whole milk cheese, leafy green and yellow vegetables, eggs, liver, dried apricots, and similar suitably selected foods is a necessity. Many of these foods have been emphasized for their protective effect in other ways. Since vitamin A is fat-soluble, the common practice of using skim milk to control weight gain during pregnancy greatly reduces the vitamin A content of the diet. In most instances, it is unnecessary to skim the milk in order to control weight gain, where careful instruction from early pregnancy has been given as to a proper diet. Where limited income makes a liberal use of vitamin A-rich foods impossible or where for some abnormal condition they must be restricted, some adequate supplementary source of vitamin A should be supplied.

Considerable interest has been focused upon thiamin (vitamin B_1) in pregnancy during the last few years. Deficiency of thiamin may be an important factor in cases of pernicious vomiting of pregnancy. It is also now associated with polyneuritis of pregnancy. We have found that in many patients the giving of additional thiamin in cases of nausea in early pregnancy is often helpful. In order to ensure the diet in its content of thiamin, whole grain bread and cereal need especial emphasis. In regard to the thiamin requirement for lactation, it is well known that the amount of this vitamin in breast milk is largely dependent upon the thiamin content of the mother's diet.

The increased demand for ascorbic acid (vitamin C) in both pregnancy and lactation is better understood than the requirements for most of the vitamins in these periods. Our own published data (14) show that in pregnancy the fetus is parasitic upon the mother for vitamin C and that the demand for this vitamin is markedly increased in the latter part of pregnancy. The second part of the study (15) shows that human breast milk from healthy mothers consuming diets well supplied with ascorbic acid furnishes approximately 40 mg. ascorbic acid daily to the infant. It also makes clear that the amount of ascorbic acid in breast milk is definitely influenced by the mother's dietary intake of this vitamin. Until more definite information as to the actual requirements are known it is best to include orange, other citrus fruits, tomato or other vitamin C-rich foods in amounts equivalent to 8 oz. orange juice of good quality (100 mg. ascorbic acid) in the daily diet during the latter part of pregnancy and throughout the lactation period.

We also advise our mothers to take cod liver oil or its equivalent throughout the period of pregnancy. This is done as a protective measure to both mother and fetus since vitamin D aids in the utilization of calcium and phosphorus. We usually recommend two teaspoons cod liver oil (U.S.P.), or five drops percomorph oil which has a somewhat higher content of both vitamins A and D and costs approximately the same.

For further information on the dietary requirements in these periods, additional selected references (16–20) are included which cover in detail those dietary requirements which I have cited.

In summary, it is apparent that if the pregnant woman in this country is to receive in her food the amounts of the

nutritional essentials which the periods of pregnancy and lactation demand, she must include in her daily diet at least one quart of milk and liberal amounts of other protein-rich foods such as meat, eggs and cheese. Orange juice (8 oz.) or its equivalent and liberal amounts of other fruits, emphasizing often the use of such dried fruits as apricots, should also be included in the diet daily. Equally important is the liberal use of leafy green and yellow vegetables, and other vegetables including potato. The potato, because it contains a few calories (one medium potato = approximately 100 cal.), has been often pushed aside regardless of its milligram of iron, its vitamin C (12–20 mg. after cooking in the jacket) and its 3 gm. protein. Whole grain bread and cereal should certainly replace white bread and cereal completely in these periods. We might also well urge the use of some molasses in place of white sugar, a much pleasanter method than the use of medicinal iron in obtaining iron, and often much less disturbing to the digestive tract. It will also furnish some of the needed calcium.

Too much emphasis cannot be given to the fact that the mother must have an intelligent appreciation of the value of proper rest, sleep, water, exercise and other factors as important to good nutrition in its fullest sense as her dietary needs. She should be given a simple daily plan which includes these health habits together with a dietary plan which will make certain that all the specific requirements are met as completely as the individual case will permit.

REFERENCES

(1) Stanley, L.: From tradition to science, U. S. Dept. of Agriculture Yearbook, Food and Life, p. 97, 1939.

(2) Stuart, H. C., and Staff: The Center, the Group under Observation, Sources of Information, and Studies in Progress. Monograph of the Society for Research in Child Development, National Research Council, Washington, D. C. Vol. 4, No. 1, 1939.

(3) Technical Commission of the Health Committee, League of Nations: Report on the physiological bases of nutrition. The Problem of Nutrition, Vol. 2, 1936. (Obtainable from Columbia University Press)

(4) Hunscher, H. A., Hummell, F. C., Erickson, B. N., and Macy, I. G.: Metabolism of women during the reproductive cycle, J. Nutrition, 10: 579, 1935.

(5) Strauss, M. B.: Observations on the etiology of the toxemias of pregnancy. IV. The primary role of the plasma proteins in conditioning water retention and edema formation in normal and "toxemic" pregnancy. Am. J. M. Sc., 195: 723, 1938.

(6) Hummel, F. C., Sternberger, H. R., Hunscher, H. A., and Macy, I. G.: Metabolism of women during the reproductive cycle. VII. Utilization of inorganic elements (A continuous case study of a multipara), J. Nutrition, 11: 235, 1936.

(7) Hummel, F. C., Hunscher, H. A., Bates, M. F., Bonner, P., Macy, I. G., and Johnston, J. A. A consideration of the nutritive state in the metabolism of women during pregnancy, J. Nutrition, 13: 263, 1937.

(8) Macy, I. G., and Hunscher, H. A.: An evaluation of maternal nitrogen and mineral needs during embryonic and infant development, Am. J. Obst. & Gynec., 27: 878, 1934.

(9) Adair, F. L., Dieckmann, W. J., and Grant, K.: Anemia in pregnancy, Am. J. Obst. & Gynec., 32: 560, 1936.

(10) Corrigan, J. C., and Strauss, M. B.: The prevention of hypochromic anemia in pregnancy, J. A. M. A., 106: 1088, 1936.

(11) BETHELL, F. H., GARDINER, S. H., AND MACKINNON, F.: The influence of iron and diet on the blood in pregnancy, Ann. of Int. Med., 13: 91, 1939.

(12) FULLERTON, H. W.: Anemia in poor class women with special reference to pregnancy and menstruation, Brit. M. J., 2: 523, 1936.

(13) MACKAY, H. M.: Nutritional anemia in infancy with special reference to iron deficiency. Spec. Report Series No. 157, Med. Research Council, His Majesty's Stat. Off., London, 1931.

(14) TEEL, H. M., BURKE, B. S., AND DRAPER, R.: Vitamin C in human pregnancy and lactation. I. Studies during pregnancy, Am. J. Dis. Child., 56: 1004, 1938.

(15) INGALLS, T. H., DRAPER, R., AND TEEL, H. M.: Vitamin C in human pregnancy and lactation. II. Studies during lactation. Am. J. Dis. Child., 56: 1011, 1938.

(16) COONS, C. M.: Studies in metabolism during pregnancy, Oklahoma Agric. Exper. Sta. Bull., No. 223, 1935.

(17) GARRY, R. C., AND STIVEN, D.: A review of recent work on dietary requirements in pregnancy and lactation with an attempt to assess human requirements, Nutrition Abstr. & Rev., 5: 855, 1936.

(18) DIECKMANN, W. J., AND SWANSON, W. W.: Dietary requirements in pregnancy, Am. J. Obst. & Gynec., 38: 523, 1939.

(19) TEEL, H. M., AND BURKE, B. S.: The diet during pregnancy and the nursing period, M. Clin. North America, March 1937.

(20) RABINOWITCH, I. M.: Nutritional Requirements of the Mother During Lactation, Canad. M. A. J., 39: 76, 1938. (Also included in Nutrition in Everyday Practice, Canad. M. A., 184 College St., Toronto, Canada, 1939.)

Nutrition in Public Health Administration

The state nutritionist should be an outstanding leader in her field. Her functions are educational and advisory. She works through the local health departments and also through her colleagues on the state staff. . . .

Every local health department should have the benefit of the advice of a trained and competent nutritionist. Here direct service is given and direct results obtained. Where possible the nutritionist should be a full-time employee of the local health department. She should possess the necessary technical and personal qualifications so that she can carry out effective work. In addition, she should be a good teacher and should also have had social service experience.—*Smillie, W. G., Public Health Administration in the United States, The Macmillan Company, New York, 1940.*

STUDY OF METHODS OF FOOD SERVICE IN LARGE SCHOOL CAFETERIAS[1]

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THE purposes of this survey, a preliminary report of which was included under the Annual Reports in the December JOURNAL, were manifold, but chief emphasis perhaps should be laid on the following:

First, by securing the support of directors of large individual school cafeterias or of school cafeteria systems, we hoped to provide a cross-section of the most representative and efficient methods of administering food units which are so vital in the health and education of our future citizens.

Second, it was hoped that the results of the survey would supplement certain data secured by similar projects in hospital and college dormitory fields. Points of similarity and of difference may now be better appreciated not only by our members but by trained dietitians seeking employment in these three fields.

Third, it was intended that the survey should reveal to boards of education and to dietitians in associated fields the high standards for which school lunchroom workers strive and the vital role they play in guiding the health habits of growing children.

And finally, by indicating the qualifications and responsibilities of the manager of a school cafeteria, it was our hope further to raise the standards and increase the supply of trained workers in this field.

Assuming that the highest degree of organization is to be found in the larger schools, we restricted the questionnaire to large cafeterias or large systems of cafeterias. Then, too, there would seem to be no inherent difficulty in modifying and applying the methods of the larger groups to meet the needs of smaller systems. The questionnaire, therefore, was sent to directors and managers of lunchrooms in cities with a population of 50,000 or over, with exceptions made in the case of states whose cities did not come within that limit. Also, in order to reach the leading dietitians in the country, we asked the presidents of state dietetic associations for suggestions as to outstanding school lunchroom people in their states. In addition, representative members from the rolls of the American Dietetic Association and the Conference of Food Service Directors were questioned. This was the basis for the mailing list.

Of the 200 questionnaires sent out, 93 were returned duly completed. Some replied in explanatory letters that it was either impossible or impracticable for them to provide the information requested; others, that their cafeterias did not fall within the large-size category. Many, on the other hand, included much

[1] Presented before the Administration Section, American Dietetic Association, New York, October 22, and the Conference of Food Service Directors, Detroit, November 8, 1940. The complete report of the study with tabular summations, constituting a joint program of the American Dietetic Association and the Conference of Food Service Directors, is on file in the business office of the American Dietetic Association. Mimeographed copies of the complete report are also available.

detailed information as to specific financial, personnel, and purchasing procedures and forms, with illuminative menus and nutritive data. This task, coming as it did in the midst of the school lunchroom's busiest season, the closing of schools, was doubly arduous. However, it is hoped that the assembled information, indicating the existing conditions, will aid the trained dietitian to interpret the trend of events, and perhaps help her to increase the efficiency of her organization and service, all to the larger end of better meeting the needs of growing children under her jurisdiction.

In helping to formulate the questionnaire, credit is due Dr. Mary de Garmo Bryan of Columbia University, Quindara Oliver Dodge of Simmons College, S. Margaret Gillam of New York Hospital, and Fern Gleiser of Iowa College; and to Dorothy Andrews and Sylvia Commins, both of the Rochester Board of Education, in recapitulating and summarizing the results.

Statistics are traditionally dull reading, but they bring into focus, as no honeyed words can do, existing facts and figures. So, in the hope that the results of the survey may inspire us all to further accomplishments, I present the facts and figures—ungarnished but predigested!

From the 93 replies it was shown that the lunchroom system is centralized in 45 cities, partially centralized in 22, and operated as individual units in 26. The average enrollment of children in a city system was 45,357 with a faculty of 1445. In an individual school the student enrollment was given as 1877 with a faculty of 69.

There is a trained person in practically all the larger lunchrooms, 680 being listed for the 93 cities reporting. Also represented are 619 trained assistants and 4887 untrained workers.

An encouraging trend is indicated in the qualifications for personnel. Although not all directors and managers hold college degrees, many replies indicated that the tendency is to demand this, and that future vacancies would be filled by a trained person. The majority of places require that the manager hold a B.S. degree; a few, the M.S. degree.

Most directors and managers are on a teacher's schedule, although a few are on civil service status. The majority of directors are paid from sales, but comments indicate that the trend is to include this salary in the teachers' budget paid by the educational department. The salary of a director ranges from $1200 to $5000 a year, depending on the size of the system, the geographic location and the volume of business, while the manager's salary ranges from $360 to $3400 a year. Increments, ranging from $50 to $200 a year for directors and from $40 to $150 for managers, depend on length and quality of service. Almost all directors and managers are affiliated with some professional organization.

Of the 93 cities included in the study, 82 require a medical examination of the employee before working in the lunchrooms, the fee for which is usually paid by the board of education, and yearly check-ups are necessary in a great many systems. Workmen's compensation insurance is available in most places and hospitalization allowed in about one-third of the cities. Only 22 institutions offer a retirement pension.

Salaries for various positions have a wide range. The allowance for lunch is

usually unlimited, although it ranges from 10¢ to 50¢ in about one-third of the cities, some also receiving breakfast.

Many lunchrooms provide the employees with a manual and others issue bulletins from time to time. Monthly meetings for employees are the rule, but some call meetings whenever necessary, only three schools reporting no meetings held.

Student help is used in almost all schools, averaging about 131 for a city system, and about 25 for an individual school. The students are generally paid in food, but in those instances where paid in cash, the rate ranges from 15 to 40 cents per hour worked.

The survey revealed that purchasing is a fertile field which lunchroom people might profitably study more thoroughly. The healthy financial structure of the lunchroom is dependent upon efficient purchasing which in turn conditions the success of the lunchroom as a factor in promoting better nutrition of school children. More accurate and higher grade specifications rigidly adhered to are a goal within the reach of every lunchroom director. The general practice is for the director or supervisor to purchase most of the food, or else to indicate where the individual managers may buy specified items, the manager herself usually buying such perishables as fresh fruits and vegetables. Some places run routine tests on milk, ice cream, butter, eggs, meat, baked goods, and canned goods.

Although several methods obtain for purchasing and formulating specifications, on the whole most items are purchased weekly on competitive quotation, according to specifications set up by the lunchroom department and guided by federal and state government standards. Canned goods, bread, milk, ice cream, and candy, especially, seem to be purchased on an annual contract basis, always on specifications previously set up.

Data on food cost accounting show some interesting percentages. With sales considered 100 per cent, purchases run about 61 per cent, payroll 29 per cent, depreciation, repairs and replacement about 3 per cent, gas and electricity 2 per cent, cleaning supplies 1 per cent, and other expenses, such as laundry, napkins and reserve, about 3 per cent. Some vouchsafed figures on ideal percentages, which approximate 62 per cent for purchases, 31 per cent for payroll, 2 per cent for depreciation, repair and replacement of equipment, 2 per cent for gas and electricity, and 1 per cent for cleaning supplies. Here again possibilities for further study are opened up so that workable operating percentage guides may be more accurately evolved. If a profit is made most lunchrooms turn the money into a fund for buying new and repairing old equipment, a fund to which the board of education, the lunchroom department, and the director have access.

One way to check efficiently on the nutritive value of food served in a lunchroom is to analyze the purchases at regular intervals, indicating the per cent spent on various items. Guided by this, the manager may increase or decrease certain food on her menu. About 70 per cent of those answering this question say that they analyze their purchases for the individual schools, and about 40 per cent analyze the total purchases of the system.

Most schools charge 5 cents for each

item on the menu. Plate lunches are featured in almost all schools, the majority offering a 10, 12 and 15-cent tray lunch, allowing about 65 per cent for raw food cost.

About one half of those reporting keep portion costs. Some keep daily raw food costs and a few, production cost sheets or other record as a check on menu costs which are generally figured at current prices. Most people standardize recipes for total yield and portions, using standard utensils, although there are comparatively few test kitchens organized for this purpose.

A big factor in the variance in numbers served in school cafeterias is the fact that the students and faculty are usually not confined to the school during the noon hour. On the whole, however, about 56 per cent of the children enrolled and about 78 per cent of the faculty eat in the lunchrooms in schools having cafeterias. The per capita sales to children average 12 cents, and to teachers, 17.5 cents. To fit these economic limits and yet provide a balanced meal is one of the prime jobs of the school lunchroom manager.

The feeding of indigent children is one of the social as well as nutritive problems facing the lunchroom manager. Students are selected on the basis of need, malnutrition, and home conditions by city welfare departments, visiting teachers, health education department and others, some of whom help the cafeteria finance the feeding of the indigent. The manager tries to guide their selection of food on a per capita allowance of from 5 to 15 cents, depending on the need of the individual and varying with different city systems.

Federal surplus commodities are used in a number of elementary schools, and in some junior and senior high schools. Most places serving surplus foods receive supplementary funds necessary to buy food in excess of the commodities furnished. Efficient distribution of federal surplus foods to needy children is far from being well organized, and many places recognize the necessity for a more satisfactory solution of the problem in order that the children may be benefited to the utmost, and the drain on the lunchroom department held to a minimum.

In a great many schools a nutrition education program is stressed, usually with the cooperation of the principal, the faculty, and the superintendent, and with the aid of various departments, among which the health education and home economics departments seem most active. Where such programs exist, the art department makes posters; talks are given in English classes, in assemblies, and over the radio; the superintendent is sometimes in a position to give talks to community groups on this subject; and science classes build lectures around typical tray lunches. All these help to focus the child's attention on his nutritive needs, and train him to select his food wisely.

Parent and community education is promoted by talks before parent-teacher meetings and over the radio, by newspaper articles, publishing school menus in the papers, and by giving the children menus to take home which are printed a week in advance. Various civic organizations are invited for lunch and one or two parents may be invited each week to give their suggestions. During

"Open House" week, food exhibits are displayed and inspection of the kitchen invited.

In all these ways the school lunchroom manager can participate and become an integral factor in the education and well-being of the child and the community.

Thus the survey has taken up the major fields of school lunchroom operations: personnel, purchasing, finance, feeding of the indigent, food preparation, equipment, and nutrition education of children and community. In this summary we have tried to indicate briefly the strong and weak points of school lunchroom organization throughout the country as shown by this survey.

Socialized Medicine

We hear much of socialized medicine. The practice of medicine, because of its intimately personal nature, cannot be successfully regimented. Of all our citizens, the general practitioner can do more to save our threatened system of free enterprise than any other single group. When general practitioners tell their patients what the loss of our system of free enterprise will mean to them and to every one in this country, what meddling with the practice of medicine by bureaucrats will mean to the health of their children and their community, how socialization or state control of medical practice might well be a prelude to the complete destruction of free enterprise, they know that what he says is true. The general practitioner occupies not merely a strategic position in this changing world but he can, more than most groups, control the direction and extent of the change that must come with changing conditions. His quiet comments and advice, his reputation for justice and fair dealing, his common sense will do more to prevent the disasters that would follow the regimentation of medicine under the state or under any alien social order than any other one social force.—*From an abstract of an article by Dr. J. P. Simonds, Northwestern University Medical School, J. A. M. A., 115: 2234, 1940.*

SURVEY OF MILK MODIFICATIONS[1]

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THE necessity for modifying cow's milk for human consumption is based upon the fact that the milk of each species is specific for its own young. This specificity is due to quantitative and qualitative chemical differences and to variability of the indigenous enzymes and bacteria.

Because milk is the food of choice and constitutes almost the sole article of diet for the young infant, interest in milk modification and progress in infant feeding have gone hand in hand. Whole, raw unmodified cow's milk is a dangerous food. It is not bacteriologically safe, and it is not easily digested by the infant because of the large, tough, hard curds produced in the stomach. The process of attenuating the curd of cow's milk with its sixfold greater casein content than human milk, and making it bacteriologically safe, is the basis of all milk modifications.

Inadequate knowledge of chemistry, bacteriology, and sanitation prevented progress until about 1860, Pasteur's time. The concept of the problem of milk modification as recently as 1847 was expressed by Condie in his *Treatise on Diseases of Children*. He stated: "The milk of the mother is the natural and only proper food for an infant. Nature does not afford nor can art supply any substitute."

Until almost the fifteenth century, the successful method of feeding an infant deprived of its mother's milk was by use of a wet nurse, and its common substitute was direct suckling from a cow, goat or ass. In 1473, Metlinger in his *Kinderbuch* mentions "pap", a combination of milk, eggs, flour, and water, as an infant food. The discouraging report made by Raulin in 1765, two centuries later, evidences the lack of success in artificial feeding at that time. He stated that of 132 artificially-fed infants in a foundling home, only five survived two years.

How much of the high infant mortality of that time was a result of inadequate knowledge and how much the result of crude equipment is difficult to determine. Knowledge of sanitation was followed by improvement in feeding technique and utensils. Interesting feeding vessels have been unearthed from the coffins of early Roman and Greek infants. These were made of glass, earthenware, wood, or metal and were shaped like a small jug or pitcher with a spout. In the middle ages, the Germans and French used a spoon for feeding. "To bring up on the spoon" is still synonymous with artificial feeding. The finger was often used for thicker foods. The earliest nipples were made of cow's teats. Later, sponges were attached to bottles, or rags were dipped in the milk and offered to the child for suckling. Cork nipples perforated by a glass tube extending to the bottom of the bottle, preceded the use of the modern rubber nipples.[2]

[1] Presented before the Tri-State Hospital Assembly, Chicago, May 1, 1940.

[2] An excellent collection of the originals of feeding vessels dating back several hundred years B.C. is in the possession of Mead Johnson and Company, Evansville, Indiana. This firm contemplates publication of a photographic brochure of these articles in the near future.

The transition to scientific methods of investigating milk began with Biedert, in 1869. He was the first to attempt to make a cream, milk, and sugar mixture of relatively the same composition as human milk. He found that the curds occurring in the stools of artificially-fed dyspeptic infants were composed of casein. During the same period, Meigs at Philadelphia advocated a mixture consisting of milk, cream, lime water, and milk sugar. The work of Meigs was elaborated in 1896 by Rotch, who popularized percentage feeding. This resulted in the establishment of the Walker-Gordon laboratories in which percentage feeding prescriptions were filled. Abraham Jacobi, a contemporary of Rotch, assailed percentage milk formulation. He advocated cane sugar instead of milk sugar, the boiling of milk, and cereal water dilutions.

In 1899, Rubner and Heubner published monographs on the daily food requirements of infants, and the following year Escherich demonstrated the importance of the bacterial flora of the intestinal tract.

In 1909, Czerny and Keller found that the curds formed in the stools of artificially-fed dyspeptic infants were composed of fat, and they attributed digestive disorders to this factor. With this Finkelstein did not agree, and in 1910 he advanced the theory that sugar is the important element in the genesis of diarrheas of infancy. He introduced Eiweissmilch in order to eliminate this factor. In 1911, Brennemann and Ibrahim independently observed that hard curds often occurred in the stools when raw milk was given and were never present when boiled milk was fed. Feeding raw milk was followed by casein curds, and feeding boiled milk was followed by fat curds in the stools of the infants observed. This explains the apparent discrepancy between Czerny's and Biedert's reports.

The advent of a bacteriologic era had a profound influence on the use of raw milk. It became evident that the bacteria present in raw milk was an important cause of the prevailing high rate of infant morbidity and mortality. Soxhlet, recognizing the importance of this factor, in 1886 advocated heat sterilization of milk. A reaction against this procedure occurred when evidence accumulated to show that boiling destroyed the antiscorbutic properties of milk; certified and pasteurized milk have replaced it. Commercially pasteurized milk was first used in Germany in 1880. Shorer and Rosenau showed that milk pasteurized by holding at 145°F. for 30 minutes was bacteriologically safe and free of pathogenic organisms. Coit in 1883 conceived the idea of producing certified milk. He set up rigid rules for the handling, collection, and distribution of this product. Since that time, public health authorities have advocated the use of either heat-treated or certified milk. Various commercial modifications of these products have been introduced.

Condensed milk was among the first of these modifications. It was introduced by Gail Borden in 1853, and was popularized during the Civil War. A little more than half of the water is removed by evaporation and 43 per cent cane sugar is added. It has the advantage of high concentration, easy transportability, and good keeping qualities. Its disadvantages are its low protein, low vitamin, and excessive sugar content.

In the 1880's, evaporated milk came into use. Its usefulness was demonstrated by the military forces during the World War, and in the devastated areas produced by that cataclysm. The evaporation process removes 55 per cent of the water; the product is homogenized, canned, and sterilized at 240°F. for 15 minutes. When diluted with equal parts water, this milk has approximately the same caloric value as whole milk. Its keeping qualities, simplicity in handling, and low cost recommend it. Its low vitamin content, the poor quality of the milk often used, the presence of indigenous thermostabile bacteria, and the danger of contamination through small perforations of the can, are undesirable features.

Dried or powdered milks have been fairly extensively used since 1925. There are two methods of preparation that lead to somewhat different products. By the spray process, whole pasteurized milk is sprayed into a chamber through which air heated to 180° is being passed. Examples are Merrel-Soule's Klim, and Mead Johnson's Powdered Whole Milk. In the Just-Hatmaker or roller process, the fresh whole milk flows over steam-heated rollers from which the residue is scraped and put in containers. Dryco is such a milk; it has nearly two-thirds of the fat removed before drying. Dried milk is not always sterile, but is safe as far as pathogenic organisms are concerned. The vitamin content is only moderately decreased. When ingested, the resulting curd is finely divided and soft. It is well-tolerated, has good keeping qualities, and is easily transported. The disadvantages are the low fat content, the cost, and the length of time needed for formularization.

Dilution of milk with sterile or cereal water is one of the earliest and most universally prevalent methods of modification. The use of cereal water results in a finer and softer curd than when water simply is added.

Pre-coagulation and pre-digestion are also used in milk formulation. Milk that has once been coagulated, whether by acids as in buttermilk, or by rennin as in Chymogen, shows very little tendency to recoagulate in the stomach. Eiweissmilch or protein milk is such a preparation. These milks are easily digested. Their unpleasant taste, which often causes the infant to refuse them, and the difficulty of preparing such products in the home, are deterrents to their use.

Other methods of altering the casein curd have been employed, but are no longer commonly used. Peptonization was a complicated and time-consuming process in which the casein was changed into non-coagulable albumoses and peptones. Additions either of lime water, sodium citrate, sodium bicarbonate, potassium salts, and milk of magnesia have all been used for this purpose.

Today, boiling occupies an important place in curd modification, and this, together with dilution and the addition of sugar is a common method of milk formulation. It produces an easily digested milk. Its disadvantages are that it decreases the vitamin content of the milk; its preparation is laborious; and in the cooling phase, bacteria multiply rapidly. One should recognize that thermostabile organisms survive boiling and that contaminants are introduced by the personnel handling the product.

Acidification also alters coagulability. Marriott popularized the use of acidified

milk. It is prepared either by adding cultures of aciduric bacteria (B. acidophilus or the Bulgarian lactic acid bacillus) or by the addition of lactic acid, orange juice or lemon juice. Buttermilk, with its natural acidification, was used for many years in infant feeding. These milks are well-tolerated and very useful in the treatment of delicate or sick infants. The preponderance of acid-forming organisms in one instance and the resulting low p_H in both instances make such milks valuable. If the milk is highly acidified, however, some infants refuse to take it.

The aim of many investigators has been the production of a complete milk food necessitating only the addition of water in its preparation. Several such products are on the market, among which the most commonly used are Olac, S. M. A., Similac, Lactogen, and Recolac. When diluted as directed by the manufacturers, they have a caloric value of approximately 20 calories per ounce. In general, these products are well tolerated because of their sterility, low curd tension, and moderate fat content. They are more costly, however, than pasteurized milks.

The apparent merits of a low curd tension, emphasized by Hill in 1923, led to the production of "soft curd" milk for commercial distribution. In 1933, Lyman, Browne and Otting developed the Zeolite process, or base exchange method. This milk has a zero curd tension. In the process, 20 per cent of the original calcium and phosphorus of the milk is removed. The need of the rapidly growing infant for large amounts of calcium and phosphorus, as shown by Sherman, would seem to make a milk from which these elements have been removed, undesirable as an infant food.

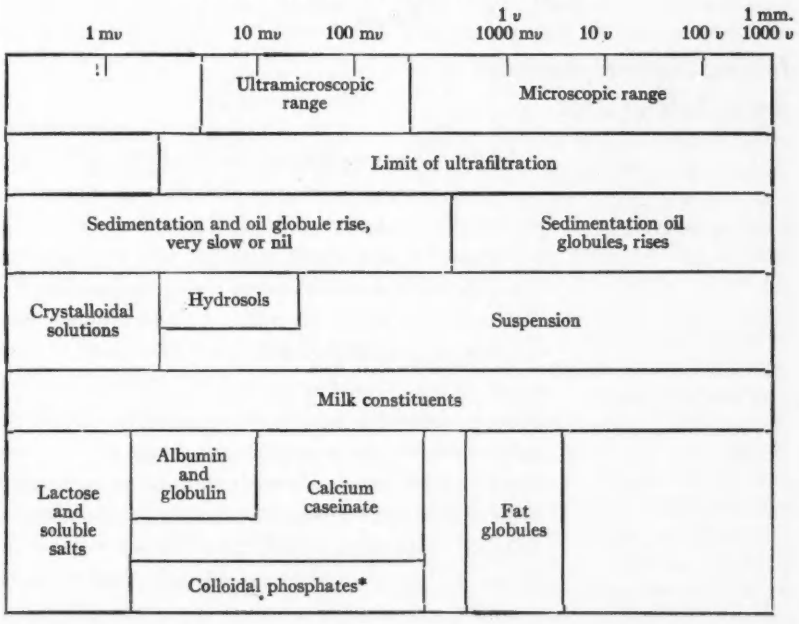
Enzylac, a soft curd milk, produced by the addition of a proteolytic enzyme prior to pasteurization, is a recent development in milk modification. Pasteurization inactivates the enzyme. This treatment reduces the curd tension below 20 gm. The natural flavor of the milk is retained. Its composition is quantitatively unaltered; and when ingested, the resulting curd is soft flocculent and remains finely divided. In its preparation for infant feeding, boiling is unnecessary and the associated possibilities of bacterial contamination and multiplication are reduced. We have shown, in a carefully controlled clinical investigation, that newly born and premature infants tolerate the product well, develop normally, and have less diarrhea than those on the control milks used. Furthermore, since the milk is unboiled, refrigeration costs are decreased and the formula laboratory becomes a comfortable place in which to work.

Recognition of the physical character of the curd formed in the human stomach is of great importance in milk formulation. The complexity of the composition of milk suggests the number of modifications that can be made by alteration of any phase of its components. To quote Holm, "Milk is a colloidal system composed of several phases varying in their degree of dispersion. The continuous liquid phase may be viewed as a water solution of lactose, various salts, and soluble proteins (albumin, globulins, etc.); and the suspended phases as fat, calcium caseinate and some colloidal calcium phosphate

suspended in the homogenous phase in very fine states of division." Chart I is Holm's idea of the composition of milk.

A discussion of milk modifications would be incomplete without consideration of the methods of preparing and handling the product. Certified and pasteurized milks contain only a harmlessly small number of non-pathogenic organisms, but the events that transpire after the milk leaves the dairy are of utmost importance. The single greatest factor of bacteriological safety lies in the maintenance of a bacteriostatic temperature after bottling at the dairy plant. The delivery, preparation of formulas, and their storage, should be at a temperature of 50°F. or below, because organisms accidentally introduced in milk below 50°F. multiply slowly if at all. With cold ingredients and proper refrigeration, a low bacterial count is maintained until the formula is consumed. On the other hand, indigenous non-pathogenic organisms, contaminants from the air, and organisms introduced during the preparation of hot milk formulas, multiply with extreme rapidity during a prolonged cooling phase. The refrigerator becomes an incubator when its temperature is above 60°F. It is, therefore, a logical recommendation that all milk preparations be made and kept at a low temperature.

CHART I. DISPERSION OF MILK CONSTITUENTS



* Range of size not known.

In conclusion, we might say that almost all modifications in milk formulation have added something to the ease of digestibility and assimilability of milk, and yet we must be cognizant of the fact that many modifications have sacrificed important elements normally present in milk to a greater or lesser degree. Therefore, the simpler the modification of a good milk, the more likely are we to conserve the desirable known factors and the elements which may be, as yet, unrecognized. The cold processing of Enzylac has, in our experience, more nearly fulfilled these requirements than have any of the other milk modifications with which we have worked.

Income, Natural Resources, and a Liberal Diet

A favorable relationship between the number of people and the natural resources is vital to a democracy. . . . Although the unparalleled prosperity which the United States has enjoyed in the past has been closely associated with a rapid increase in population, it should be obvious that its continuation is not dependent on a similar rapid rate of population growth and would indeed even be hindered by a too rapid growth. Recent studies of diet, of land that can be safely cultivated and of this country's capacity to produce and consume have thrown new light on the subject of optimum population for the United States. As pointed out in a study of the Brookings Institute, it would seem that a reasonable minimum aim of our national economy would be to provide the entire population with a liberal diet which would furnish adequate nutrition, a substantial margin of safety in respect to vitamins and minerals, and a satisfying variety of foods. To reach the minimum standards proposed would require an increase in the volume of production over that existing in 1929 of all kinds of consumer goods and service by something like 70 to 80 per cent. In brief, and employing optimistic assumptions which are far removed from existent fact and may not be possible of attainment, it would require a national income of some 146 billion dollars to support 128 million persons at the minimum "optimum" standard of living and assuming an even distribution.—*Editorial, J. A. M. A., 115: 2283, 1940.*

THE ECONOMY OF COMBINATIONS OF DAIRY PRODUCTS IN LOW-COST ADEQUATE DIETS[1]

AUBYN CHINN AND GRACE MARY GUSTAFSON

The Borden Company, Chicago

(This report shows the results of a study with twelve low-income families in Chicago. The money the families were spending for food, an average of 11 cents per adult meal, was used as a basis. It was shown that they were purchasing with this amount a diet inadequate in every food need. The food budgets in the study, at a cost of from 8½ to 11 cents per adult meal, purchased a diet adequate in every food need using a combination of fluid and concentrated milks with an allowance of one quart of milk equivalent per child and one pint for each adult.)

ANALYSES of food budgets in the low-income group show this consistency: the budgets lack sufficient amounts of the protective foods—vegetables, fruits and milk.

Nutritionists have recognized the fundamental contribution of milk in fortifying the diet. For this reason, emphasis upon the amount of milk used in all diets and especially low-cost diets has received considerable attention. In analyzing diets, the amount of milk used in relation to the amount of money available has been the subject of much consideration.

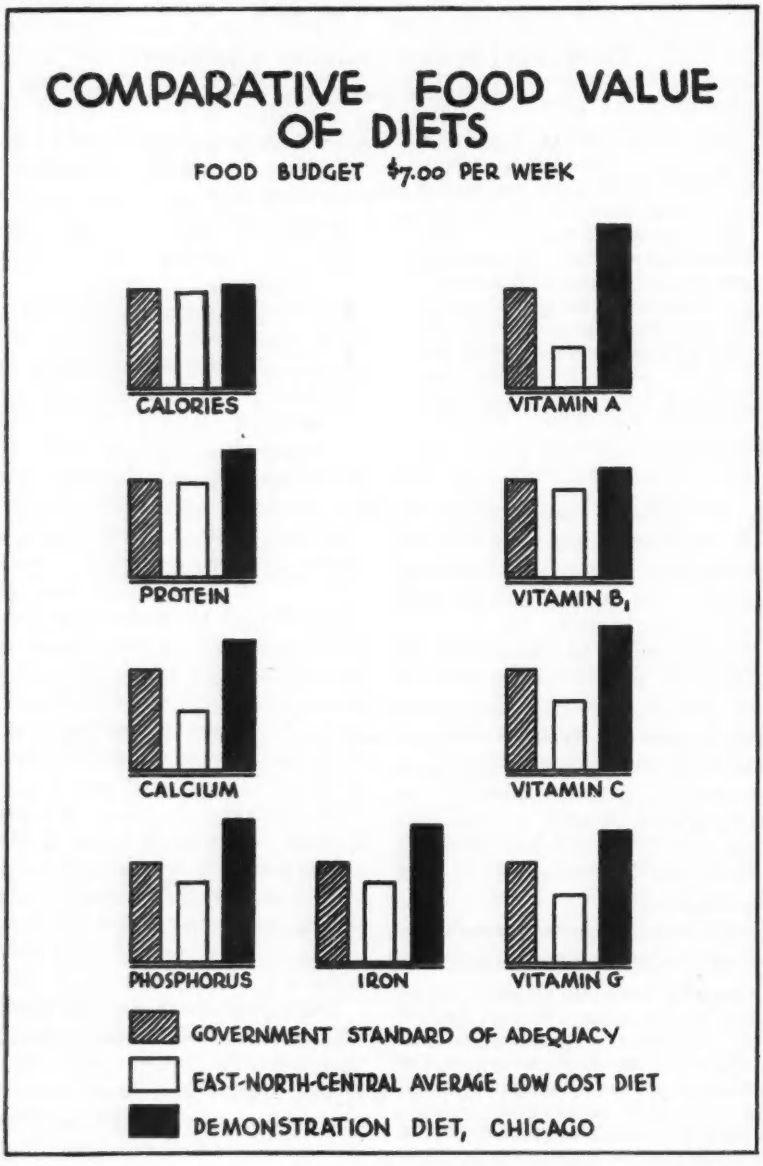
Numerous surveys have shown that as money for food decreases, the amount spent for milk decreases but not proportionately. Conversely, as money for food increases, the amount spent for milk also increases, but up to a certain point only. The fact is often overlooked that the amount of money spent for other foods increases and decreases just as it does for milk. This is shown graphically in the recent study of 4000 records of a week's food consumption of families in all areas of the United States.

An analysis of this data shows that for the East North Central area in which Chicago falls, families spending $1.25 to $1.87 per person per week bought 116 quarts of milk equivalent per person per year. Families with $3.75–$4.37 purchased 152 quarts per person per year of milk equivalent. Of this increase only 8 quarts was fluid milk. The total increase was 36 quarts of milk equivalent. This figure broken down on a weekly basis reveals that it is an increase in milk consumption of only 1.4 pints milk equivalent per person per week, although there is an increase of $2.50 per person per week in the food budget. With double the food money it is not the inability to buy milk but a lack of understanding of its food value that is revealed in this choice.

This survey shows also that families with as much as $4.38 per person per week in the Pacific area, which has the highest consumption, bought less milk than that recommended by the government. When asked why they do not use more milk, housewives almost in-

[1] Presented before the Missouri Dietetic Association, Kansas City, Missouri, April 12, 1940. Two booklets: "The Economy of Combinations of Dairy Products in Low Cost Adequate Diets" and "Economical Adequate Diets" giving more complete details concerning the study are available to those interested on application to The Borden Company, 221 N. LaSalle St., Chicago.

CHART NO. I


COMPARATIVE FOOD VALUE OF DIETS
FOOD BUDGET $7.00 PER WEEK
CALORIES
VITAMIN A
PROTEIN
VITAMIN B1
CALCIUM
VITAMIN C
PHOSPHORUS
IRON
VITAMIN G
GOVERNMENT STANDARD OF ADEQUACY
EAST-NORTH-CENTRAL AVERAGE LOW COST DIET
DEMONSTRATION DIET, CHICAGO

variably say, "the price is too high." Yet they do not always know the current price per quart.

Circular 507 of the United States Department of Agriculture summarizes the findings of the survey in this way:

> The chances for better diets increased with rising per-capita expenditures for foods. This was due chiefly to a more liberal use of milk, meat, eggs, leafy green vegetables and fruits, when more money was available. But the quality of the food supply selected by families was by no means only a matter of level of food expenditures. At every expenditure level above a certain minimum, some families succeeded in obtaining good diets but others procured food only fair or poor from the standpoint of nutritive value. For example, with an expenditure of $2.50 a person a week for food, 32 per cent of the families in East South Central cities bought good diets while another 37 per cent obtained diets that were classed as poor.

A number of trends in the last few years, as indicated in the following, have tended to influence the consumption of fluid milk.

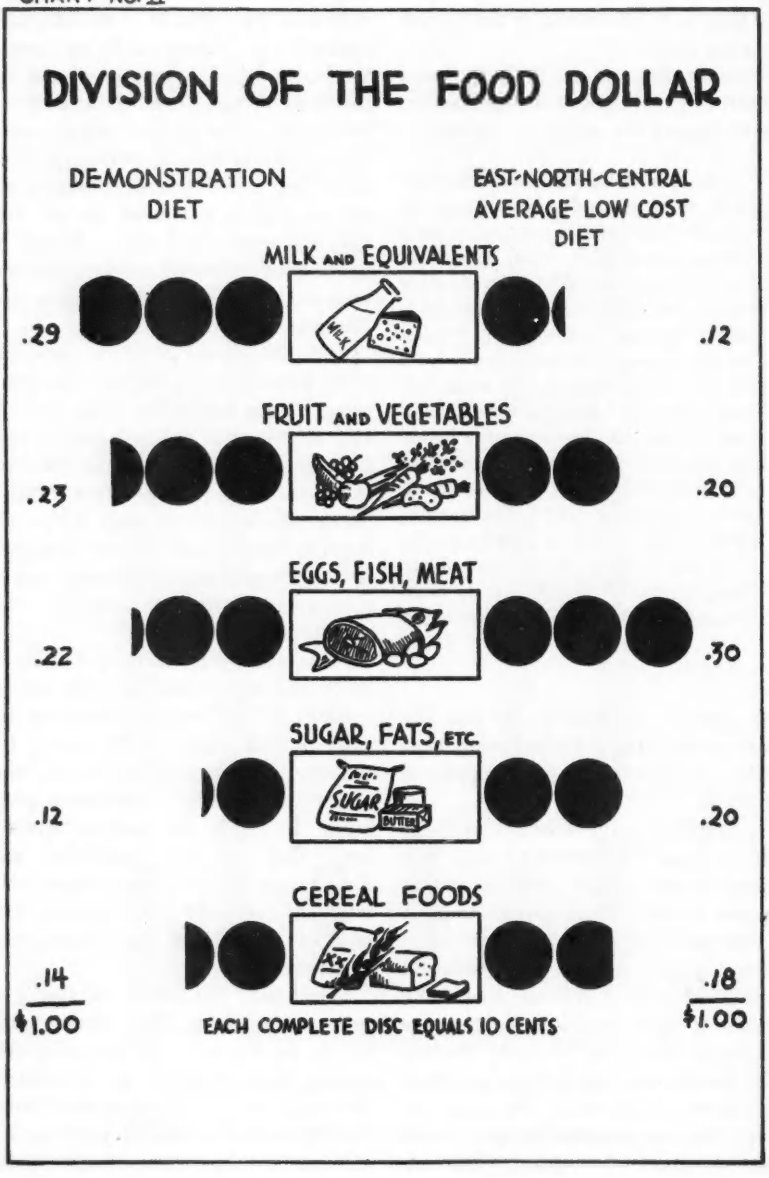
1. Emphasis on evaporated milk as just as good nutritionally and less expensive, has caused families on low incomes to use evaporated milk in place of fluid milk but not as much nor for as many purposes as they had previously used fluid milk. This is shown by figures of milk consumption for the eight-year period of 1930–38. During this period the consumption of fluid milk decreased 10 quarts per capita per year. The consumption of evaporated milk increased $4\frac{1}{4}$ pounds. This increase replaced only $3\frac{7}{8}$ quarts of the fluid milk. The rest of the decrease in fluid milk went into such manufactured products as cheese and ice cream. While the consumption of cheese has increased in this period a little over a pound per capita per year and ice cream about one-half dish per person per year, these two manufactured products are not so widely consumed as are fluid milk and evaporated milk. Figures on butter production and consumption were excluded from these calculations (*see* Chart II).

2. A differential of store price and home delivered price for milk has transferred a large proportion of the distribution of fluid milk in low-income groups to stores. Families buy milk from the stores but not to the extent of that previously bought through home delivery service. Both of these changes in food buying habits, although sound economically, have lowered consumption.

3. Another factor in the reduction of milk consumption has been the critical attitude of the public concerning the price of fluid milk. Each market has different production costs, different wage scales and different distribution problems. In only a few markets have the costs that go into production and distribution of fluid milk been tabulated and presented to the public. This lack of information has caused misunderstanding.

Faced with the results of trends in milk consumption and certain rigid factors in the price of fluid milk over which the distributor has no control, this study was undertaken to discover if there is a way in which families on low incomes can purchase recommended amounts of milk or milk equivalent in

CHART NO. II


DIVISION OF THE FOOD DOLLAR
DEMONSTRATION DIET
EAST-NORTH-CENTRAL AVERAGE LOW COST DIET
MILK AND EQUIVALENTS
.29
.12
FRUIT AND VEGETABLES
.23
.20
EGGS, FISH, MEAT
.22
.30
SUGAR, FATS, ETC.
.12
.20
CEREAL FOODS
.14
.18
$1.00
$1.00
EACH COMPLETE DISC EQUALS 10 CENTS

an adequate low-cost diet without seriously reducing or eliminating the foods to which they are accustomed.

Every dietitian knows there are several ways in which adequate diets may be obtained on low-cost food budgets. These ways, however, have not been widely accepted where they have necessitated a change in general food habits. Again, in order that families in which there are many children may have adequate fluid milk a larger percentage of the budget must be spent for milk than such families are willing to allow, since it would mean less to spend for other foods.

The study was approached as a social economic problem based on nutrition research and with the following objectives:

1. To aid mothers in budgeting their food money so that the greatest food value might be obtained for the money spent.
2. To provide an adequate diet based on minimum adequate standards.
3. To include in this diet the recommended amounts of milk.
4. To plan adequate diets including a quart of milk for each child and a pint of milk for each adult in milk and milk equivalents.
5. To show that the habit of giving each child a glass of milk to drink at every meal is the easiest method of including the quart of milk per day and one that simplifies meal planning.

The Bureau of Labor Statistics made a survey of the incomes of 36,000 Chicago families. This survey lists $500 to $750 a year as the lowest self-supporting income level. On this amount families spent 42 per cent of their incomes for food, averaging 11 cents per adult meal. For the study, it was decided to choose self-supporting families whose yearly income was within the $750 to $1000 bracket. For comparative data a recent government survey (Circular 507) was used which shows that families of four in this income bracket in the East North Central area in which Chicago is located spend from $5 to $7.50 a week for food.

Five recognized welfare agencies, such as medical clinics, settlement houses and health centers, cooperated by choosing the families for the study. This cooperation gave the families confidence in the study and assured their conscientious participation in carrying out the general plan. The families chosen were of various nationalities and races including Polish, German, Italian, Irish, Danish and negro. They ranged in size from four to seven members. Within the twelve families were children of every age level from infants through adolescence. Their incomes ranged from $15 to $25 a week.

Before the demonstration every member of the family was given a thorough physical examination including all routine tests. At the end of the six-weeks period a recheck was made. Physical examinations stimulated the interest of the families and acted as a precaution in planning diets. Many members of the families were in poor physical condition due to years of neglect and poor nutrition. It was not expected, of course, that proper diet could correct these conditions in so short a time; however, there were improvements. The best physical outgrowth could be stated by the expression of the families. They said they "felt better".

A basic diet for a family of four on a weekly food budget of about $7 served

as a foundation for planning the menus. A separate nutrition requirement chart, adjusted to the size of the family and ages of its members from the basic diet, was prepared for each family. Food likes and dislikes, holidays and birthdays were considered. During the demonstration the amount of money previously spent for food was used in determining the food budget except in a few cases where the families had been spending more for food than their income warranted. In one instance the food budget was reduced $5 per week and in another, where there had been extremely poor planning and the use of expensive prepared foods, it was cut almost in half.

A Typical Day's Menu

Breakfast
Orange juice
Cracked wheat cereal
Bread and butter
Cocoa

Lunch
Peanut butter sandwiches
Bananas and cream
Milk

Dinner
Salmon loaf
Escalloped potatoes
Stewed tomatoes
Bread and butter
Oatmeal cookies
Apple sauce
Milk
Coffee

The records of families in the East North Central area show that on a food budget of from $7 to $7.50 per week, families of four were buying a diet inadequate in every food need. The chart illustrates the comparative food values of the diets purchased by families in the East North Central area, the government standards for minimum adequate diets for a family of four and the diet used in the demonstrations (*see* Chart I).

Before the demonstration began, the nutritionist interviewed each family in regard to their food habits, amount of money spent for food and the amount of dairy products used. Each mother kept a record of her own menus and food expenditures for a week. This made it possible to know the food habits of the families and also to check on their improvement in menu-making during the demonstration.

During the first three weeks of the demonstration, menus and market orders were planned for each family. Every week during the experiment each family was visited. During the last three weeks the mother planned her own menus following an outline showing the type and amount of foods to be included. In this way she learned, under supervision, to budget her food money and plan adequate meals. The government survey showed that families in the East North Central area were buying $1\frac{1}{2}$ quarts of milk equivalent per day, less than one quart of which was fluid milk.

As a rule the demonstration families were buying one quart of milk a day regardless of the number in the family. The majority purchased milk at the store and when they felt they could afford it they bought a second quart. In two families evaporated milk was used for the babies and in some instances purchased for coffee and cooking.

The basic demonstration budget plan provided three quarts of milk equivalent a day for a family of four, of which 2 quarts were fluid milk. The remaining quart per day was made up from a

weekly allowance of one pound dry milk solids (1½ per cent fat) plus one-half pound butter and 10 ounces Cheddar cheese. Combinations of milk products were adjusted to meet the requirements of each family. The combinations sometimes included evaporated milk and cottage cheese. At least one pound of butter was included as fat in addition to the butter allowed to supplement the dry milk solids.

Typical dairy products combinations

			Milk Equiv.
Basic diet: Two adults and two children			
14 qt. fluid milk	.12	$1.68	14 qt.
1 lb. dry milk solids (1½% fat)	.15	.15	5 "
½ lb. butter	.28	.14	
10 oz. cheese	.19	.11	2 "
		$2.08	21 "
Cost per quart milk equivalent 9.9¢			
Family No. VIII: Two adults and five children			
21 qt. fluid milk	.12	2.52	21 "
1 lb. dry milk solids (1½% fat)	.15	.15	5 "
½ lb. butter	.28	.14	
10 oz. cheese	.19	.11	2 "
15 cans evaporated milk	.064	.96	15 "
		3.88	43 "
Cost per quart milk equivalent 9¢			

The families purchased their own food and each week the grocery slips were collected and the bill paid. Dairy products were delivered by the routemen to the family. Each part of the plan was made to conform as nearly as possible to the routine to which families were accustomed in order to encourage their continuance of the plan after the six-weeks period. This proved to be a helpful procedure.

RESULTS

That it is possible for families with limited incomes to have adequate diets including recommended amounts of milk, butter and eggs, has been shown by the Chicago demonstration.

Obtained adequate diets: The government survey shows that East North Central families consisting of four individuals with a food budget of about $7 had inadequate diets. The demonstration diet at the same cost included more than adequate amounts of all food needs. This was accomplished by spending 52 per cent of the demonstration food budget for the protective foods, milk, fruits and vegetables, while the average family with the same food expenditure spent but 32 per cent for these foods (*see* Chart II). (With the introduction of the quantity container in Chicago, it has been possible to reduce the cost of the milk so that the expenditure for this item on the present basis is 26 per cent of the food dollar.)

Spent no more per adult meal: In 1936, Chicago families in the lower income brackets spent about 11 cents per adult meal. The demonstration diets used by Chicago families with comparable incomes cost from 8½ to 11 cents per adult meal.

Increased milk consumption: Families in the demonstration increased their consumption of fluid milk 60 per cent during the demonstration and used concentrated milks to complete their quota. The economical combination of dairy products made the average cost of milk equivalents from 8½ to 10 cents a quart. The average cost per quart milk equivalent depended on the size of the family and the combination of dairy products.

These combinations included fluid milk at 12 cents a quart.

Realized the economy of milk: Not alone low incomes but poor planning and lack of knowledge of food values is responsible for the poor diets of many families. Demonstration families using a combination of fluid milk and dry milk solids realized the economy of milk and the great contribution it made to their diet.

The families were convinced that meals based on an adequate diet are more satisfying since they did not become hungry between meals. The most important reason for the acceptance of the whole plan appeared to be the fact that the meals tasted better than those they had previously planned for themselves and cost no more. A check-up six months later showed a majority of the families were continuing the plan.

REFERENCES

U. S. Dept. of Agric., Bureau of Home Economics: Diets to Fit the Family Income, Bull. No. 1757.

U. S. Dept. of Agric., Bureau of Home Economics: Diets of Families of Employed Wage Earners and Clerical Workers in Cities, Cir. No. 507.

U. S. Dept. of Labor, Bureau of Labor Statistics: Family Expenditure in Chicago, 1935–36, Bull. No. 642, Vol. II.

Community Education in Nutrition

The educational work in nutrition may be carried out in great part through group teaching. This is in contrast to the program for correction of nutritional defects, which must be individualized. A few of the various methods of group teaching that have proved successful may be mentioned: (1) parent meetings; (2) diet demonstrations; (3) radio addresses and other types of public lectures; (4) teachers meetings; (5) prenatal dietary instruction to special groups; (6) courses of instruction for public health nurses; (7) school-wide nutrition projects; and (8) instruction through newspapers, pamphlets and posters. All of these various activities may be planned and organized by the community nutritionist. Much of the effective teaching will be carried out by her. For example, the school-wide projects are planned by the nutritionist in conjunction with the departments of education. The materials for teaching the children, the exhibits, diet demonstrations and the like, are prepared by her for the teachers, but the actual instruction of the children is, of course, the responsibility of the individual teacher.

The community nutritionist can multiply her efforts tenfold if she adheres to the principle that she cannot devote her time to individual instruction.—*Smillie, W. G., Public Health Administration in the United States, p. 320, New York: The Macmillan Company, 1940.*

THE USE OF DRIED MILK IN CERTAIN INSTITUTION RECIPES[1]

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INCREASED production of dried milk during the past few years indicates a growing interest in its use. Already it has proved invaluable in isolated places and in other localities where fresh milk is not available. Certain hospitals under government control and other medical institutions in the United States have reported the use of dried milk for their patients. This practice represents both safety and convenience. Lack of information has undoubtedly been one of the factors limiting the amount included in the diets in other institutions.

Nutritionists believe that the flavor and texture of foods may be improved by the use of dried milk, and that additional nutritive value may be obtained by increasing the amounts in a formula. Considerable research conducted by the baking industry on foods containing dry skim milk, especially bread, seems to substantiate these claims. Bohn and Bailey (1) concluded that a good grade of dried milk incorporated at a 6 per cent level in bread improved volume, grain, and texture, as well as eating and keeping qualities. Fairbanks (2, 3) has shown that bread containing 12 per cent dry skim milk had higher nutritive value than that having 6 per cent, and that both were superior to bread which included none. The research of the dairy industry indicates that ice cream and cheese may be improved both in quality and in nutritive value by addition of dried milk. Little scientific work has been reported for its use in other products.

An immediate concern, in connection with the use of dried milk, is the effect of the drying process upon the wholesomeness and nutritive value. The quality of dried milk depends upon that of the fresh milk from which it is made, upon the method of drying, and the care taken in the manufacturing process. Dry milk solids from creameries specializing in the production of cream or butter of high quality are prepared from milk of exceptionally high quality. Most of the dried milk for human consumption is made by the spray process which produces finer particles that are more readily dispersed in water than are those made by the roller process. Fairbanks and Mitchell (4) have shown that it is possible to dry milk without appreciably affecting either the energy or the nutritive value of the proteins as indicated by a biological value of 90 for the proteins of raw liquid skim milk and 89 for dry skim milk.

Dried milk is considered an economical means of supplying milk to institutions operating on limited budgets, although the literature reveals little in regard to this problem. Kramer and Kunerth (5) studied the relative economy of the various forms of milk as sources of protein, calcium, and phosphorus. They

[1] Contribution No. 101 N.S., Division of Home Economics, Kansas State College of Agriculture and Applied Science. Submitted for publication June 5, 1940.

found dry skim milk the most economical source and that dry whole milk ranked next.

The purpose of the study here reported was to compare the quality of the product, the calculated nutritive value, and the cost of the milk in products prepared with fresh skim milk, dry skim milk in quantities to approximate those of fresh skim milk, dry skim milk in double these amounts, and dry whole milk.

Ten recipes from *Food for Fifty* by Fowler and West (6) and one from *Experimental Cookery* by Lowe (7) were selected. These included: cocoa, baking powder biscuits, plain muffins, cheese soufflé, macaroni and cheese, cream of asparagus soup, cream of tomato soup, white sauce for creamed and scalloped vegetables, baked custard, butterscotch pudding, and white cake.

Three different kinds of milk and two different amounts of dry skim milk were used in each recipe. For all but the white cake, the quantities were cut to one-fourth those of the original formulae. The full recipe of 25 servings was followed for the cake. The only variations in the formulae were the kinds of milk used. Fresh skim milk was selected as the control since it is used for cooking in many institutions. Values formulated by Whiteman and King (8) of the Bureau of Home Economics were used in converting volumes as given in the original recipe, to weights. The equivalents of dried milk were calculated from Borden's Volumetric Milk Conversion Table. They agreed with the amounts used by Child (9) but were slightly lower than the proportions suggested by the Bureau of Home Economics (10).

The milk was reconstructed for all products except biscuits, muffins and cakes. In the latter products, the dried milk was added with the flour. No difficulty was experienced in mixing the milk with the water if the milk was free of lumps before it was added. The water was placed in the utensil first and the milk sifted over the top. The milk and water were beaten with the wire whisk of an electric mixer, or for small amounts with a rotary beater until homogenous. No settling out occurred upon standing as long as eighteen to twenty hours.

TABLE 1

Approximate equivalents of milk used

Control	Fresh skim	246 gm. or 8.7 oz. per cup
Variation 1	Dry skim	¾ oz. and 8.1 oz. water per cup
Variation 2	Dry skim	1½ oz. and 8.1 oz. water per cup
Variation 3	Dry whole	1 oz. and 7.9 oz. water per cup

The experimental work, as shown in table 1, was divided into a series of a control and three variations for each recipe. The products within a series were prepared simultaneously or consecutively as the formula permitted, with time, temperature, and manipulation carefully controlled. Each series was prepared three times, and all products were scored and given a preference rating by a palatability committee of five as soon after preparation as was expedient. Objective tests were used for the cakes only. Specific gravity of the batter, the

angle at which a slice of cake broke, and compressibility of the cakes were measured using suitable apparatus.

To calculate the nutritive value of the kinds of milk used in the different formulae, the composition given by Associates of Rogers (11) was followed. The physiological value used in calculating calories was: fat, 9 calories per gram (255.15 calories per ounce): protein and carbohydrates, 4 calories per gram (113.4 calories per ounce). Since the weights of milk in the formulae were given in ounces, this unit was used in all calculations.

The cost of fresh milk for each formula for fifty was calculated from prices quoted by the College Creamery. Since there was considerable difference in the price of milk sold in 10-gallon lots and that sold in lesser amounts, both prices were considered in the calculations. Prices from the American Dry Milk Institute quoted by Fairbanks[2] were used in calculating the cost of dried milk in each formula for fifty. Since the difference in price was only one-half cent per pound when packed in 50 or 100-pound lots, the prices of dried milk in 100-pound lots only were used in the calculations.

[2] Personal communication with B. W. Fairbanks, Dept. of Animal Husbandry, Univ. of Illinois, Urbana.

RESULTS AND DISCUSSION

In every instance, products which contained dried milk were well received. Frequently they were preferred to those made with fresh milk.

Cocoa made with dry skim milk, doubled in amount, had the most body and was considered by the palatability committee to be the most desirable. Fresh skim milk produced a thin cocoa which ranked fourth.

Biscuits made with dry skim milk ranked first and those made with fresh skim milk fourth, although the total scores in each series were close. Dry skim milk, doubled in amount, gave a slightly browner crust.

TABLE 2

Average composition of fresh and dried milk

	WATER	PROTEIN	FAT	LACTOSE	ASH
	per cent	*per cent*	*per cent*	*per cent*	*per cent*
Fresh skim	90.35	3.72	0.15	4.98	0.80
Fresh whole	86.21	3.77	4.45	4.86	0.72
Dry skim	4.00	37.40	1.00	49.20	8.40
Dry whole	4.00	27.20	26.00	36.80	6.00

Muffins made with dry whole milk were preferred probably because of the additional fat in the whole milk. Dry skim milk, doubled in amount, produced a browner crust. There was little difference in the rating within a series, and the scores were not consistent in the three series.

Cheese soufflé made with dry whole milk was preferred in each of the three series. Dry skim milk, doubled in amount, gave a product which was less tender but one which stood up longer than the others. This rated fourth, but all the products were satisfactory.

Macaroni and cheese made with dry whole milk received a slightly higher

preference rating, but the total scores were so close that they indicated little difference in the products.

Cream of asparagus soup made with fresh skim milk and with dry skim milk, doubled in amount, ranked first, whereas that made with a single measurement of dry skim milk was rated fourth. Dry skim milk, doubled in amount, gave a little more body to the soup. The total scores, however, were close.

Cream of tomato soup made with dry whole milk was rated first. Little difference was noted for the other variations. Dry skim milk, doubled in amount, gave more body to the soup. Soup made from fresh skim milk showed a greater tendency to curdle upon standing than did any of those made with dried milk.

Medium white sauce made with dry skim milk was rated first and that from dry whole milk a close second in both preference and total scores. Dry skim milk, doubled in amount, received the fourth rank as the product was a little too thick for medium white sauce.

Baked custards made with dry skim milk and with fresh skim milk were rated first in preference and in total scores. Those made with dry skim milk, doubled in amount, and with dry whole milk tied for second. The custards which rated first were delicate, those rated second were firmer and held their shape better.

Butterscotch pudding made with dry skim milk was preferred. It also received the highest total score. The fresh skim milk pudding was rated second. All the products were acceptable, and the total scores fairly close.

TABLE 3

Cost of fresh and dried milk

MILK	AMOUNT	UNIT	COST
Fresh skim	10-gal. lots	gal.	$0.10
Fresh skim	Less than 10-gal. lots	gal.	0.15
Fresh whole	10-gal. lots	gal.	0.28
Fresh whole	Less than 10-gal. lots	gal.	0.30
Dry skim	100-lb. lots	lb.	0.075
Dry skim	50-lb. lots	lb.	0.08
Dry whole	100-lb. lots	lb.	0.17
Dry whole	50-lb. lots	lb.	0.175

TABLE 4

Relative cost of nutrients in fresh and dried milk

MILK	UNIT OF PURCHASE	PER OZ. PROTEIN	PER OZ. LACTOSE	PER OZ. ASH	PER 1000 CALORIES
Fresh skim	10-gal. lots	$0.0019	$0.0014	$0.0090	$0.070
Fresh skim	Less than 10-gal. lots	0.0028	0.0021	0.0135	0.105
Fresh whole	10-gal. lots	0.0054	0.0042	0.0282	0.096
Fresh whole	Less than 10-gal. lots	0.0058	0.0045	0.0303	0.103
Dry skim	100-lb. lots	0.0012	0.0009	0.0055	0.046
Dry whole	100-lb. lots	0.0039	0.0029	0.0177	0.076

White cake made with dry skim milk ranked first and that with dry whole milk fourth, but these were very close. The total scores of the palatability committee and also the objective tests showed little difference in the cakes within a series.

The relative calculated cost of the nutrients in fresh and dried milk are given in table 4. It will be noted that the calculated cost of the nutrients shows dry milk to be economical.

The excellent keeping quality of dry milk makes it available in remote communities and at all times. The reduced volume makes for ease of storing and simplifies the shipping problem. Although refrigeration is desirable, dry skim milk can be kept for limited periods of time without it.

SUMMARY

A comparison was made of a number of products containing fresh skim milk, dry skim milk, dry skim milk doubled in amount, and dry whole milk. The scores of the palatability committee indicated very little difference in the products prepared with the various forms of milk. An increase in the amount of dry skim milk as a means of improving nutritive value did not greatly change the quality of the product, although in some instances the quality was improved.

Dry skim milk was the least expensive form used when calculated in terms of volume equivalents. The others ranked in the following ascending order: fresh skim milk, dry whole milk, and fresh whole milk.

The relative cost of the nutrients from the different kinds of milk was essentially in the same order as above, those from dry skim milk costing least and from fresh whole milk most.

It is evident that the use of dry skim milk and dry whole milk is an economical and satisfactory means of supplying milk to institutions.

REFERENCES

(1) Bohn, L. J., and Bailey, C. H.: Effect of milk powder on physical properties of dough. Cereal Chem., 14: 339–343, 1937.

(2) Fairbanks, B. W.: A study of the paired feeding method of the nutritive value of bread made with milk solids. Cereal Chem., 16: 404–414, 1939.

(3) Fairbanks, B. W.: Improving the nutritive value of bread by the addition of dry milk solids. Cereal Chem., 15: 169–179, 1938.

(4) Fairbanks, B. W., and Mitchell, H. H.: The nutritive value of skim milk powder with special reference to the sensitivity of milk proteins to heat. J. Agric. Research, 15: 1107–1121, 1935.

(5) Kramer, M. M., and Kunerth, B.: Relative economy of different forms of milk as sources of protein, calcium, and phosphorus. J. Am. Dietet. A., 11: 318–321, 1935.

(6) Fowler, S. F., and West, B. B.: Food for Fifty. New York: John Wiley and Sons, 1937.

(7) Lowe, B.: Experimental Cookery. New York: John Wiley and Sons, 1937.

(8) Whiteman, E. F., and King, F. B.: Weights of food materials used in food preparation. J. Home Econ., 29: 641–644, 1937.

(9) Child, A. M.: Using dry skim milk. Minneosta Agric. Exper. Sta. Special Bul. 177, 1936.

(10) U. S. Dept. Agric. Bur. Home Econ.: Dry skim milk. 1938.

(11) Fundamentals of dairy science by Associates of Lore A. Rogers. New York: Reinhold, 1935.

FRUITS IN THE DIETS OF CHILDREN[1]

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WITH better understanding of the nutritive requirements of man has come a demand by the public for such foods as have been shown to have special attributes. Those interested in the fundamentals of nutrition, especially as they pertain to growth, have attempted to discover the specific nutritive advantages of some foods commonly included in dietaries. Fruits are among those most attractive to the eye, versatile in their uses and universal in their gustatory appeal.

Among students of nutrition it is generally recognized that the use of fruits is one of the most important dietary means of enhancing general development, chemical growth and physical well-being of man. This is particularly true in the nutrition of children, where the forces of growth and development are maximal. Sherman (1) has emphasized continually that "it is high time for students of food and nutrition to teach confidently that the purchase of fruit is no longer to be regarded as a luxury. It is an investment in health or in higher health—in buoyant as contrasted with merely passable health."

From the standpoint of popular, economic, and nutritional recognition, the orange and the banana have attained a most enviable position among the common fruits. In addition to their all-important vitamin and mineral content, the readily digestible carbohydrate of the banana or the particular carbohydrate components and organic acids of the orange, together with their low cost, availability at all seasons, and high palatability, have elevated these particular fruits to a more prominent place in pediatric practice in recent years, not only in the care of the healthy child but of the sick as well.

With respect to the mineral constituents, orange and banana are foremost among the fruits in alkalinizing the diet; that is, they furnish an excess of positive (calcium, magnesium, sodium, potassium) over negative (chlorine, phosphorus, sulfur) mineral elements. While it is recognized that the organism has an efficient regulatory mechanism for the control of acidic and basic ions in metabolism and is able to utilize diets varying widely in acid- and base-forming properties, it is significant that during growth and development an excess of positive elements must be stored; likewise, during pregnancy and lactation an excess of positive elements is in constant demand.

For the past nine years the Research Laboratory of the Children's Fund of Michigan has engaged in extensive investigations of the "Chemistry of Growth and Nutrition in Childhood"[2], using experimental subjects selected as normal by rigid criteria and carrying on the work under highly standardized conditions. During the course of these studies it has been possible to determine some of the specific dietary effects of fruits, particularly bananas and orange juice, on the nutritive response of these

[1] Submitted for publication, June 27, 1940.

[2] To be published in monograph form.

children as measured not only by their utilization of nitrogen and minerals but also by other growth criteria such as weight, height and skeletal maturity. It is our purpose to present a summary of the results as further proof of the nutritive attributes which fruits, banana and orange in particular, contribute to a diet (2–4). Inasmuch as metabolism of all the important positive (calcium, magnesium, potassium, sodium) and negative (chlorine, phosphorus and sulfur) minerals of the body was investigated, as well as nitrogen metabolism, a more complete picture of chemical growth or increments in childhood has been obtained than is possible in the usual study, in which only a few elements such as calcium, phosphorus and nitrogen are considered.

Although calcium and phosphorus are the primary constituents of bone, and nitrogen that of the soft tissues (muscles, glands, nerves), approximately 30 per cent of the phosphorus utilized is incorporated into soft tissue. Sodium and chlorine are contained in the extracellular fluids, but potassium is a cellular constituent. The storage of potassium, nitrogen and sulfur provides an estimation of non-skeletal tissue formation. Furthermore, the utilization of one element is influenced by that of another, calcium *vs.* phosphorus, sodium *vs.* potassium, and nitrogen *vs.* sulfur; therefore simultaneous observations of the metabolism of all of these important elements essential to normal growth lead to a more precise determination of body requirements.

Eight children, ages 5 to 10 years, were used for the study of the effect of adding to or substituting banana in a dietary which conformed to accepted dietetic practice. This diet furnished approximately 0.8 gm. calcium, 60 gm. protein, and 1900 calories daily, depending upon the age, size and activity of the individual. In addition, the diet provided acceptable quantities of known vitamins, calculated according to the values presented by Munsell (5): 4800 to 5000 International Units vitamin A, 280 to 400 I.U. vitamin B_1, 1700 to 2000 I.U. vitamin C, and 600 to 850 I.U. vitamin G daily. While the vitamin D contents of the diets cannot be calculated, the children received supplementary amounts of vitamin D ranging from 90 to 180 I.U. per day from irradiated milk, and played in the open country where sunshine was available in generous amounts.

Although three children received an addition of 100 gm. banana and five received the banana as a substitution for cereal, the alkaline-ash values of the mixed diets were increased 7.7 and 7.6 meq., respectively, even though quantities of the individual minerals varied. The data given in table 1 illustrate the average response of the children to the dietary alteration. Both nitrogen and mineral retentions were enhanced, but, although both positive and negative minerals were retained in greater amounts, the increase was slightly greater for the negative elements (21 meq.) than for the positive (17 meq.), producing a small reduction in excess retention of positive minerals.

These results not only emphasize the dietary influence of banana but also illustrate the advantage of studying all of the important mineral elements simultaneously. The nutritive advantage of the fruit is shown by the increased quantities of nitrogen and

minerals stored daily and skeletal development is indicated by the retentions of an excess of positive elements during both the control and experimental periods. However, the preponderant effect is a stimulation of soft tissue synthesis, which is shown by the increased nitrogen and potassium retentions, the greater increase in storage of negative minerals than of positive elements, and the fact that the calcium: phosphorus ratios of the retentions were less than 2:1, the proportion normally found in bone.

Comparative studies of the influence of synthesized, processed and natural sources of vitamin C were carried on with children from the same group of subjects. Under the same controlled conditions and environment, nitrogen and mineral balances were determined for four children during control and experimental periods of 25 to 40 consecutive days. A daily addition of 20 mg. ascorbic acid to the mixed diets constituted the only change in food intake during the experimental period. During the entire study the subjects were receiving 50 cc. daily of an orange-lemon preparation which contained some sugar and citric acid. During other control and experimental periods of 15 to 35 consecutive days, balances were determined for four children whose daily diets were changed during the experimental period only by the substitution of an equivalent amount of fresh orange juice for the orange-lemon preparation[3].

TABLE 1

Average daily nitrogen and mineral retentions of children during control periods and after changes in the fruit content of the diets

	8 CHILDREN		4 CHILDREN		4 CHILDREN	
	Control period (275 days)	Additional banana in daily diet (285 days)	Control period (135 days)	Additional 20 mg. ascorbic acid daily (100 days)	Control period (120 days)	Fresh orange juice added to daily diet (60 days)
Nitrogen (mg./kg.)[1]	17	22	24	28	10	26
Positive minerals (meq./kg.)[2]	0.72	0.89	0.86	0.81	0.78	1.14
Calcium (mg./kg.)	4.1	5.3	5.2	7.1	5.0	6.3
Magnesium (mg./kg.)	0.9	1.3	0.9	1.0	1.4	2.7
Sodium (mg./kg.)	5.4	6.1	6.2	3.9	5.2	4.6
Potassium (mg./kg.)	7.8	9.7	10.2	8.2	7.5	16.1
Negative minerals (meq./kg.)	0.62	0.83	1.01	0.76	0.59	0.41
Phosphorus (mg./kg.)	4.8	6.2	8.1	6.7	6.5	3.8
Chlorine (mg./kg.)	11.2	13.8	14.3	8.6	7.0	4.8
Sulfur (mg./kg.)	0.4	1.3	2.2	2.1	0.2	0.9
Excess positive minerals (meq./kg.)	0.10	0.06	—	0.05	0.19	0.73
Excess negative minerals (meq./kg.)	—	—	0.15	—	—	—

[1] Milligrams per kilogram of body weight.

[2] Milliequivalents per kilogram of body weight.

[3] The orange-lemon preparation was the result of attempts to procure a more consistent and more stable source of vitamin C even though the content was lowered. During the course of a study of the minimal vitamin C requirements of infants up to the age of one

Although the average retentions of both positive and negative minerals per unit weight were reduced with the addition of 20 mg. ascorbic acid, the reduction was greater with the negative minerals, which resulted in a change in excess mineral retention from 0.15 meq. negative minerals during the control period to 0.05 meq. positive minerals during the experimental period (*see* table 1). Since it is known that the body should store an excess of positive over negative minerals, especially during growth, the mineral retention would indicate an improved relationship among the amounts of positive and negative minerals retained, even though the levels of storage were reduced. The shift in excess mineral retention from negative to positive minerals indicates a stimulation of skeletal growth. This is substantiated by the average retention of the individual mineral elements, for only calcium showed an appreciable increase in rate of accumulation, increasing from 5.2 to 7.1 meq. per day. Furthermore, phosphorus retention decreased from 8.1 to 6.7 meq. per day, producing a calcium:phosphorus ratio closer to that of bone (2:1).

When fresh orange juice was substituted for the same amount of the orange-lemon preparation in the diets of four children, the vitamin C intakes were increased by an amount equivalent to 15 mg. ascorbic acid per day. As with the synthetic ascorbic acid supplement, average intakes of nitrogen and positive and negative minerals per kilogram of body weight were reduced, but the average alkaline-ash value of the intake was increased from 0.85 to 1.09 meq. per kilogram. From the retentions per kilogram given in the table the differences between the response to 50 cc. fresh juice containing 26.4 mg. ascorbic acid and 50 cc. orange-lemon preparation plus 20 mg. synthetic ascorbic acid, a total of 31.3 mg., are readily apparent. With the fresh orange juice the average retentions of nitrogen and positive minerals were increased and those of negative minerals reduced. The increases in storage of nitrogen, total minerals, and positive minerals in excess of negative minerals indicate a stimulated rate of construction of both hard and soft tissues. These findings support the premise reached by other investigators (6): that some factor other than vitamin C content is, in part at least, responsible for the superior nutritive advantage of fresh orange juice over ascorbic acid.

From the results of these studies it seems evident that inclusion of raw banana and fresh orange juice in diets already of accepted high quality en-

year, data collected from analyses of samples of car-load lots of oranges confirmed their wide variation in vitamin C content, and analyses of orange juice showed losses of as much as 50 per cent of the vitamin C content caused merely by straining through a metal strainer (the iron acting as a catalyst in oxidation). The juice in the orange-lemon preparation was partially dehydrated *in vacuo*, sugar was added as a preservative, and because some nutritive advantage has been attributed to the acid of citrus fruits, approximately 1.5 per cent citric acid was included in the formula. The mixture provided 0.23 mg. ascorbic acid per cubic centimeter and the average content of the fresh orange juice substituted in the same amounts (50 cc.) in the diets during the experimental period was 0.53 mg. per cubic centimeter. The orange juice was expressed with glass utensils and strained through cheesecloth. The increase in ascorbic acid intake per child per day from the substitution of 50 cc. fresh orange juice for 50 cc. of the orange-lemon preparation was equivalent to 15 mg. ascorbic acid.

hanced the chemical and physical growth of the normal children, represented by the storage of nitrogen, total minerals, and height and weight gains. Moreover, the fact that the individual minerals (positive—calcium, magnesium, sodium, phosphorus; negative—chlorine, potassium, sulfur) were determined simultaneously, brought out specific evidence of the types of growth occurring which otherwise would be obscure. The results with banana show that whereas both skeletal and soft tissue construction was in progress, soft tissue synthesis received the greater impetus. In the case of the ascorbic acid, skeletal tissue was stimulated although total mineral storage was reduced, but with fresh orange juice the formation of both soft and skeletal tissues was accelerated and the total minerals retained was increased.

Whereas all fruits are not alike in composition and of equal value with the orange and banana, in the words of Sherman (7), "they are not luxuries, but good investments. They afford us an excellent opportunity to invest our food money in health and pleasure at the same time."

REFERENCES

(1) SHERMAN, H. C.: Food Products, p. 410, New York: The Macmillan Company, 1933.

(2) HUNSCHER, H. A., HUMMEL, F. C., AND MACY, I. G.: Effect of varied banana intake on nitrogen and mineral balances of normal children, Am. J. Dis. Child., 60: 509, 1940.

(3) MACY, I. G., HUMMEL, F. C., HUNSCHER, H. A., SHEPHERD, M. L., AND SOUDERS, H. J.: Effects of simple dietary alterations upon retention of positive and negative minerals by children, J. Nutrition, 19: 461, 1940.

(4) SHEPHERD, M. L., MACY, I. G., HUNSCHER, H. A., AND HUMMEL, F. C.: Synthesized, processed, and natural sources of vitamin C in the mineral metabolism of normal children, J. Pediat., 16: 704, 1940.

(5) MUNSELL, H. E.: Planning the day's diet for vitamin content, J. Am. Dietet. A., 15: 639, 1939.

(6) CHANEY, M. S., AND BLUNT, K.: The effect of orange juice on the calcium, phosphorus, magnesium, and nitrogen retention and urinary organic acids of growing children, J. Biol. Chem., 66: 829, 1925.

(7) SHERMAN, H. C.: Food and Health, p. 177, New York: The Macmillan Company, 1934.

No Breakfast Tale

Sir Cedric Hardwicke, supping with friends in Chicago, told of the elaborate dinner Lucius Beebe gave Howard Dietz in Hollywood recently. Beebe took a great deal of trouble to have the dinner an epicurean success, and at each course held forth himself on the excellence and suitability of the wines. The meal was too rich for Dietz and he was ill in the night. Next day, when he talked to Beebe, he admitted that the dinner had been too much for him.

"But you will be glad to know, Beebe, that the Chablis came up with the fish," he said.—*Tonics and sedatives, J. A. M. A., 115: 26, 1940.*

EDITORIAL

INCOMES OF AMERICAN FAMILIES IN RELATION TO DIETARY ADEQUACY[1]

It is of the very essence of democracy that there should be general concern about the amount and distribution of family income in this country. If family life in all parts of this country does not have a sound economic foundation, the whole structure is threatened.

Figures which have recently been released by the Department of Commerce show that per capita income payments to individuals in 1939 were 5 per cent higher than in 1938 and 9 per cent higher than in 1935–36. Combining these figures with data on family incomes from the National Resources Committee we may estimate that the median income of families throughout the country was $1250 in 1939, or $90 more than the figure for 1935–36, $1160. This estimate is based on the assumption that the increase in the total national income was evenly distributed throughout the entire population, which was apparently not far from the case. These figures take account of food and fuel produced on farms for family use, but they do not include any estimate of the income produced by women working in their own homes for their own families. The value of the contribution of such women to family income is extremely important, but it is so difficult to estimate that it has so far escaped the statisticians.

Recognizing the close relationship between family income and welfare, we must turn to family budget data to find out what it means to have half the families in the country with incomes under $1250.

When family income is compared with the cost of a standard family budget, it is obviously necessary to make separate comparisons for urban, village, and farm families, as the goods and services required in these three situations are inevitably different. There are no standard budgets for farm and village families which are generally accepted the country over. Perhaps diversities of consumption habits among farm and village families would make the general acceptance of a budget for farm families or a budget for village families impossible. Generally accepted budgets by regions would be of material assistance in studying income problems.

Separate income data for city, farm and village families are not available for 1939, but they have been calculated by the National Resources Committee on the basis of the Consumer Purchases Study for 1935–36. In that year, half of the nation's families had incomes below $1160. Half of the city families not having received any relief during the year had incomes below $1475 and the corresponding point for non-relief farm families was $1070. Not quite a third of the families composed of three to six persons had incomes below $1000, whereas 38 per cent of the families with 7 or more persons dependent on the family purse had incomes below $1000. We may compare the city income figures with the cost of a so-called maintenance budget—a budget providing the Bureau of Home Economics' "good diet," reasonably adequate clothing and housing,

[1] Abstract of an address by Faith M. Williams before the American Dietetic Association, New York, Oct. 24, 1940.

a radio, movies and newspapers but no automobile, modest church contributions, a small life insurance policy but no other savings. This budget cost $1260 for a family of four in 1935. When the cost of living at this level for families of different size was compared with data on family incomes by type of family from the National Health Survey, it was found that two-thirds of the children in American cities in 1935 lived in homes where the family income is less than the equivalent of $1260 for a family of four.

The relation of income to family welfare is particularly evident in the amounts available for food as well as for other items of family living. Recent studies of the Bureau of Labor Statistics clearly indicate that as more funds are available per family member, the level of food consumption increases. Not only dollar expenditures but actual quantities of food purchased per adult male equivalent are higher among families at higher consumption levels. The composition of the foods also changes from low to high family consumption levels. There is an increase at higher levels in expenditures for meat, fish and poultry, fruits and vegetables, milk and milk products, but a relative decline in flour and other grain products and starchy vegetables. There is a marked increase in the consumption of protective foods.

Using the nutritionists' standard of a quart of milk a day for each growing child and a pint of milk for each adult, the milk purchases of families of non-relief, employed wage earners and clerical workers at the lowest consumption level studied met 37 per cent of their needs, those of the middle group 50 per cent, and of the highest group 63 per cent.

Approximately 40 per cent of the white families and 11 per cent of the negro families with total expenditures of less than $400 per adult male equivalent spent enough for food to buy the "low-cost adequate diet" of the Bureau of Home Economics as compared with 88 per cent of the white families and 73 per cent of the negro families at the $400–$600 consumption level. Ninety-eight per cent of the families which had $600 or more per adult male equivalent were spending enough to obtain this diet.

The Food Stamp Plan has operated to increase the real incomes of families on relief in the communities where it is in operation, and it has at the same time contributed to the income of the farm families that produce the much needed foods which through a series of economic misfortunes have come to be classified as surplus.

Well-fed as America is in comparison with other countries, there are nevertheless approximately 40 per cent of our families with diets in marked need of improvement. In part this results from the insufficient purchasing power discussed above. In part it results from lack of knowledge about human needs for food. The real income of the country could be increased if our women and our men, too, were better trained in a knowledge of food needs on the one hand, and food values on the other.

ADOLESCENT DEVELOPMENT AS DETERMINED BY NUTRITIONAL STATUS[1]

Rapid changes in physical structure and function and mental and emotional development occur during the period of

[1] Abstract of an address by William Schmidt, M.D., Departments of Pediatrics and Public Health, Cornell University Medical College, presented before the American Dietetic Association, New York, October 24, 1940.

adolescence, and the succession of such changes occurs at different rates, the length of the whole period varying with the individual. Thus, wide physical differences are found in adolescents of the same age. This developmental variation is not confined to the adolescent age period, but characterizes the entire growth period and therefore continues to be a factor of major importance in assessing the physical status during growth.

The diagnosis of manifest nutritional deficiency disease does not require consideration from this point of view, since such conditions may be determined by well-defined clinical signs and symptoms. However, the diagnosis of "subclinical" deficiency states at present calls for chemical or physiological tests to determine evidences of the deficiency. The interpretation of variations in results of such tests and assessment of their significance relative to nutritional status, require a knowledge of other possibly important causes of variation: namely, the rapid developmental changes in adolescence mentioned previously.

Appraisal of developmental status in adolescence may be based upon external evidence, such as the appearance of the primary and secondary sex characters. Broadly, this approach permits the grouping of adolescents, without reference to age, into a few relatively homogeneous developmental groups. More precise appraisals, however, must be based upon some attribute such as skeletal development which manifests more clearly defined changes throughout the period.

The method, which has been employed by a number of investigators, depends upon the use of a standard series of roentgenograms which reflect the stages of developmental progress in one or several areas of the skeleton. Each roentgenogram in the series is intended to represent the degree of development over a given 6 or 12-month period in "normal" children at various ages. A roentgenogram of the child to be assessed is compared with the standard series and identified with the series number of the standard film with which it compares most closely.

Such developmental appraisals reveal that in the adolescent age-span, developmental ratings spread over as much as four years at each chronological age. Average "normal" values and their ranges based upon chronological age, alone, therefore may be derived from individuals ranging in development from the immature to those nearly or fully mature skeletally. The use of more accurate methods for the diagnosis of early, mild, or subclinical deficiencies, necessary to secure the specific information required for a fully effective approach toward a solution of the nutrition problem, indicates the need for methods of studying physical variation in adolescence in the light of "normal" values and as these are affected by nutritional deficiencies.

CURRENT COMMENT

ANNUAL REPORT ON THE NATION'S CHILDREN

Since the first White House Conference on Dependent Children was called by President Theodore Roosevelt in 1909 it has become the custom to summon such a conference at intervals to report on the health and well-being of children. Most recent was the fourth, on Children in a Democracy. While parents are among those present at these gatherings, the White House Conference is primarily a gathering of experts and specialists, and the conferences occur but once in ten years. It seems important, therefore, that there should be a more direct and more frequent means by which the people of the United States can be kept informed concerning the welfare of the nation's children.

In answer to this need Mr. George J. Hecht, president of the Parents' Institute, Inc., and publisher of *Parent's Magazine*, presents the first of a series of annual reports on the nation's children in the January issue, which he feels will be rendering the parents of America an important and unique service. The reports this year are by Katharine F. Lenroot, Chief of the U. S. Children's Bureau; Thomas Parran, M.D., Surgeon General, U. S. Public Health Service; and John W. Studebaker, U. S. Commissioner of Education.

The report of Miss Lenroot reads in part:

> Our nation is engaged in a preparedness program unprecedented in scope. There is no room in such a program for waste motion. First things must be put first; but there is danger that our concern for battleships and airplanes, for food and fuel, for defense training and defense production may cause us to overlook a less dramatic but vitally important fact, namely, that the homes of the nation and the children in these homes are a first line of defense.
>
> We are proud of the great progress made in reducing the baby death rate which dropped 20 per cent in the 5 years from 1934 to 1939. But there are still each year some 50,000 babies who die in the second to the twelfth month of life. Many of them could be saved. There has been but slight decline in the death rate of babies under one month of age, and even less decline in the death rate on the first day of life. There are still some 75,000 stillbirths each year, and 70,000 deaths of infants before they are a month old. At least a third of the deaths of young infants and a considerable proportion of the stillbirths are believed to be preventable. Is not the saving of these infant lives one of our first and most important duties?
>
> We have been making slow but steady progress in the establishment of maternal and child-health services throughout our states and counties. The encouraging decline in the maternal death rate which, after remaining practically stationary for years, dropped 32 per cent between 1934 and 1939, is proof that these services are fulfilling their purpose. But more than 10,000 maternal deaths were registered in 1937 and nearly that number in 1938, and at least half of them, the experts say, are preventable. Can we afford to slacken in our efforts to make life safe for every mother-to-be? Shall we continue the fight with renewed determination and the fervent conviction that saving the lives of mothers and babies is a vital form of national defense?

Dr. Parran, reporting on "The Health of the Nation's Children", has this to say:

> Undeniable gains have been made in the health of children and young people. Here we have the greatest reason to congratulate ourselves. We have a new generation of children who are both taller and heavier than their parents; whose chances of going through the first years of life without attack by the communicable diseases of childhood are greater; and whose general health care is far superior to that of a generation ago. Moreover, new methods of treatment for many diseases now bring about speedier recovery with fewer serious complications.
>
> Three important developments in public health have contributed to this advance in child health; first, the sanitation of cities and of milk supplies; second, the prevention of certain communicable diseases; and third—what promises the greatest hope for the future—the discoveries in a comparatively new field, scientific nutrition.
>
> The findings of this young science have been translated into practical results only within one generation. The word vitamin came into our language in 1911. Just 24 years ago the cause and cure of pellagra was announced. The cause and prevention of rickets was discovered 15 years ago. Our adolescent boys and girls of today were the first children to benefit from this knowledge. Straight limbs, better teeth, strong frames, are the lot of today's children. Unsuspected rickets need no longer cripple the men and women of tomorrow. The part that nutrition plays in the total health of the nation has only just been realized. Heretofore, scientific nutrition has achieved its greatest triumphs in the discovery, prevention and even cure of nutritional diseases. In the future, we may look to our knowledge of nutritional needs to guide us in raising individual and national health to a level never before envisioned.
>
> It is not an easy matter, always, to change the eating habits of families and their ways of preparing food. Traditional patterns are followed in whole sections of the country, even when they are bad for the health of the families concerned. Unsolved problems abound, but we are beginning to know where deficiencies exist and to indicate the needs. Education of all families by the nutritionists in our state and local health departments and the provision of protective foods for underprivileged families will go far to take up the slack between advanced nutritional knowledge and lagging dietary practices.
>
> During 1941 our foremost concern will be focused on the impact of national defense upon national health. This means increased attention to the health of youth; to the physical status of the young men registered for selective service; and to the health of industrial workers upon whom the speedy attainment of our defense aims largely depends.

Mr. Studebaker, under the title "Vocational Education, Today and Tomorrow," says in part:

> Last year, when the war clouds began to lower, the United States Office of Education made a survey and found that in 20 years the local, state, and federal governments had built up an investment of more than a billion dollars in vocational schools and equipment. It found that more than 5000 trade and industrial education teachers were on the job; that others could be called on a moment's notice. Then on May 10 the Nazi legions marched into the Low Countries. Eighteen days later the President formed the National

Defense Advisory Commission. Key industries prepared for a rush of orders. New shifts were added. Employment offices began calling for skilled workers. Following conferences held in the United States Office of Education it was proposed that vocational schools be kept open during the summer, giving short courses for defense jobs. Carrying out a recommendation of the President, Congress on June 23 appropriated $15,000,000 to engage teachers for summer schools and on July 1 registration began in many vocational schools throughout the nation. Two weeks later more than 30,000 were already at the work benches. By September 1 the defense training enrollments in more than 470 cities had risen to 107,000.

Consider this contrast: In 18 months of the World War vocational schools trained only 60,000. Industries called for skilled workers, but vocational education could offer little help. It lacked teachers. It lacked buildings. It lacked equipment. In the first two months of the present crisis vocational schools enrolled 107,000. This striking difference reveals the true importance of social engineering. It is a tribute to American education that it was ready when the call to national service came on short notice.

Mr. Hecht, in summing up the above mentioned reports, states:

> We believe that, especially at this time when we are looking to national defense, it is important to stress the fact that no nation is truly prepared to defend its future unless it can point with pride to the provisions which it makes for the welfare, happiness and education of its children. We therefore offer you this report, a mirror as it were, of our national life as touching those most dear to us and most important to the future of this nation—our children.

Of particular interest to the readers of this JOURNAL is the comment of Dr. Parran concerning the place of nutrition in the total health of the nation. If the great discoveries as a result of nutritional research are to be effective, these discoveries must be applied. Thus the crying need today of a better means of nutritional education of the masses—and this must be an essentially practical and graphic type of education, one that calls for a thorough knowledge of the science of nutrition and artful skill in its practical application through the selection and preparation of foods. Only the dietitian and the nutritionist possess both this knowledge and practical skill.

Diet in Old Age

The digestion of the aged has received but little attention in the literature. There is, however, a common belief among the medical profession and the public that disturbances of digestion are associated with a faulty dietary, and restriction of diet and special diets have therefore been the vogue for the aged. Much of what is accepted seems to be based on fear and habit rather than on basic experimental observations.—*Meyer, J., and Necheles, H., Studies in old age, J. A. M. A., 115: 2049, 1940.*

BOOK REVIEWS

Clinical Diabetes Mellitus and Hyperinsulinism. By Russell M. Wilder, M.D., Ph.D., F.A.C.P., Professor and Chief of the Department of Medicine, The Mayo Foundation for Medical Education and Research, University of Minnesota; and Head of the Section on Metabolism Therapy, Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Illustrated. Philadelphia: W. B. Saunders Company, 1940, pp. 459. Price $6.

Dr. Wilder's major medical interest for 25 years has been diseases of metabolism, in particular, diabetes. He is the author of one of the most useful and popular primers for diabetic patients, publication of which antedated insulin and now is in its seventh edition.

The book under review is a thorough yet not too expansive treatment of the subject. Of all books on a like topic, in the opinion of the reviewer, this will be found to be the most helpful to the dietitian. The style is direct and lucid and the content authoritative. It will therefore prove an excellent reference text not only for the specialist but for the general practitioner and the dietitian as well. The student, too, will find therein an essentially practical explanation of the physiology and pathology of diabetes, from the viewpoint of a distinguished clinician, and as these apply in the recognition and treatment of diabetes and its many usual and certain of its unusual complications. As Dr. Wilder states in his foreword, in one year 153 pathological conditions were found among 1184 diabetic patients, the more unusual ranging from gout to tumors of the brain and spinal cord, and pernicious anemia. He therefore directs special attention to the need of meeting all such possible contingencies.

Dr. Wilder, among contemporary authorities on diabetes, was the first to emphasize the urgency of meeting "normal" nutritional needs in the treatment of the diabetic patient. Today he suggests a step further, for "a food mixture on which nondiabetic persons might 'get by' may be inadequate nutritionally for diabetic persons." In this connection the dietitian will be especially interested in what he has to say with regard to the B complex and the diabetic organism. His whole viewpoint, in fact, in regard to the diet therapy of diabetes is based upon an obviously thorough understanding of modern nutritional science.

Dr. Wilder has generously acknowledged the assistance of his several medical associates, and that of two dietitians, Mary Foley, assistant professor at The Mayo Foundation, and Sister Mary Victor, dietitian in chief, St. Mary's Hospital, among others. The dietitian who teaches students or assists the physician will welcome this book as an invaluable addition to her professional library.

Essentials of Nutrition. By Henry C. Sherman and Caroline Sherman Lanford. New York: The Macmillan Company, 1940, pp. 418. Price $3.50.

Every dietitian and nutritionist looks upon the works of Dr. Sherman as the keystone of her scientific references. The most recent of his contributions, in the writing of which he was assisted by his daughter, will meet a real need for a text which assumes no prerequisite training in science. The appended exercises and suggested readings at the end of each chapter will materially assist the teacher and student, and the whole should interest the average, intelligent, non-student reader who wishes to learn the relation of food to health and efficiency.

Interesting illustrations include that of the original Atwater-Rosa-Benedict respiration calorimeter, inside and out, and the modern portable and stationary types in use today. Among the many excellent features in this book are the summary of the subject, acid-base balance in the body; the chapters on food costs and values, and how to make nutritional knowledge more effective; and an appendix which includes the planning of diets in terms of twelve food groups.

Hors D'Oeuvre and Canapés. By James Beard. New York: M. Barrows and Company, Inc., 1940, pp. 189. Price $1.75.

Mr. Beard, the author of this book, has won newspaper mention in New York as director of a specialized catering service for cocktail parties and suppers. He is said to have graduated from the operatic stage and radio work, to a course in institution management at the University of Washington. He explains the phrase "hors-d'oeuvre" (and the word should be hy-

phenated, Mr. Beard) which means literally "outside the meal", and regardless of the variety *oeuvre* remains singular and not *oeuvres*. He thinks its ancestor probably came from China, crossing the steppes into Scandinavia, thence to France. Its early American ancestry seems to date from the five-cent beer and free lunch of pre-prohibition days. Mr. Beard makes his contribution to the larger life with a discussion of the fine differentiations between the canapé, the smörgåsbord, the Russian *zakuska*, the Italian *antipasto*, and the English savory. He quotes Prosper Montagne's comments on the origin of the word "cocktail" in *Larousse Gastronomique*, in which is described *"le cocktail primitif des pionniers de Manhattan."*

Much of the author's dissertation on the key to the cocktail party constitutes the essence of good hospitality—the flowers, the light and the warmth of welcome are as important as the food service. All the essential equipment for making those dainty tidbits designated as appetizers under several names, are detailed in text and photographs. The recipes included cover practically all the known varieties of hors-d'oeuvre, both hot and cold, canapés, sandwiches and accessories, and hors-d'oeuvre as a first course at luncheon or dinner. A complete index and photographs add to the interest of this unique book.

A Manual for Dietary Employees in State Hospitals. A Rating Form for Employees in Dietary Departments. Department of Public Welfare, State of Illinois, 1940, pp. 127 and 11 respectively.

Both manuals were prepared under the direction of Christine R. Pensinger, food and textile adviser, Department of Public Welfare, State of Illinois, under the auspices of the Administration Section, American Dietetic Association, with the assistance of several dietitians. Divided into sections, part I includes a discussion on personnel management, including rating forms; rules for employees; a suggested code for dietary employees; precautions during epidemics, particularly with regard to food handlers; and tests for employees. Part II covers the operation and care of equipment, including electrical, gas, coal and steam, and miscellaneous items; the care and cleaning of floors; and care and operation of equipment. Part III discusses the preparation of food, including the use of recipes, kitchen cleanliness and methods of reducing waste. Part IV covers the serving of food, and a discussion on the cafeteria method for use in hospitals for the mentally ill and feeble-minded, and part V, the prevention of household pests, including flies, cockroaches, ants, etc. This should prove a very helpful manual. It is artistically and pleasingly bound, the design having been supplied by a WPA art project.

The second manual discusses the purpose and procedure in preparing rating forms and includes a sample rating form now in use in the Division of Foods and Textiles of the State of Illinois.

Nutrition and Dietetics Workbook. By Alberta Dent, Associate Professor of Home Economics, New Jersey College for Women. Ann Arbor, Michigan: Edwards Brothers, Inc., 1940, pp. 152. Price $2.25 plus postage, upon application to author.

This is an original and very practical workbook, bound in loose-leaf style with paper cover. It opens with an explanatory preface, followed by reference tables and a few specific directions for work, table of equivalents, conversion figures, and lists of average servings. The objectives of the course in nutrition are simply and clearly stated as to appreciations, knowledges, habits and skills necessary. After a brief introduction the workbook is divided into seven units of study as follows: relation of nutrition to health; composition and classification of food; principles of nutrition; nutritional contribution of the various food groups; selection of adequate dietaries for optimal nutrition; and meal planning.

Each unit consists of an outline of work, references, supplementary questions for study and discussion, vocabulary of terms to be understood, problems to be solved, tables, score-cards and sometimes diet sheets or other types of work sheets. This workbook is designed to supplement whatever text or reference material is chosen for the course. It is most practical and useful and covers the subject of nutrition for the college student adequately and in a very interesting manner. I have no hesitation in recommending its use in any normal nutrition or dietetic course.—EMMA L. FEENEY, *Pratt Institute, Brooklyn.*

Diet Manual. Prepared by the Dietetics Department, Harper Hospital, Detroit, 1940, pp. 115.

This is the 1940 edition of an excellent manual compiled under the direction of Mary M. Harrington, Dietetics Department, Harper Hospital. As stated in the foreword, "it is not a compilation of ready-prepared diets, but an analysis of the normal diet with such variations as have therapeutic value. All doctors are urged to confer with the director of dietetics concerning specific problems. Individualization of the patient is important and every diet must consider his likes and dislikes and be modified according to the social, economic, racial and religious influences affecting his food habits." The table of contents includes a discussion of the normal diet, classification of foods, routine hospital diets and the various modifications of the normal diet with regard to variations in mineral, protein, energy, fat, cholesterol content of foods, and so on. The section on weighed diets is particularly noteworthy. Another section covers miscellaneous diets, special variations of the normal diet, infant feeding, children's diets, diet in pregnancy, and finally the various tables of equivalents, height, weight, etc.

Vitamins for Health and Beauty. By Mabel Stegner. New York: Home Institute, 109 West 19th Street, 1940, pp. 39. Price 15 cents.

This is certainly an encouraging title even though somewhat optimistic regarding beauty. It should answer the need for an inexpensive source of information on the important question of an adequate diet. The content is liberally based on the work of such authorities as Sherman, Rose, Munsell, McCollum, and Bogert and Porter. It is written in simple style, readily understandable to the average intelligent adult. Miss Stegner has included practical points concerning the conservation of vitamins during food preparation and a list of references for further reading.

Labor Turnover in Hospitals

The turnover rates of hospitals, as established by this questionnaire, compare favorably with the total separation rates for industry, as compiled by the United States Bureau of Labor Statistics, which are as follows:

	1934	1935	1936*
Quit	10.67	10.37	13.02
Discharge	2.24	2.29	2.63
Lay-off	36.26	30.08	24.70
Total Separation	49.17	42.74	40.35

In order that there be a uniform definition of terms, the following are given from the United States Bureau of Labor:

A *separation* is a termination of employment due to quits, lay-offs, and discharges.

A *quit* is a termination of employment usually initiated by the worker.

A *discharge* is a termination of employment at the will of the employer.

A *lay-off* is a termination of employment at the will of the employer without prejudice to the worker.

The hospitals state that they have no lay-off problem, due to the fact that they have no seasonal work. Therefore, if the lay-offs are taken out of the industrial figures, it is found that the hospital percentage of labor turnover is approximately twice as high as that of industry.—*Walter, F. J., Survey of labor turnover in hospitals, Hospitals, December, 1940.*

CURRENT LITERATURE

American Journal of Digestive Diseases

Vol. 7, November 1940

*The fate of ingested glucose solutions of various concentrations at different levels of the small intestine. H. Shay, J. Gershon-Cohen, S. S. Fels and F. L. Munro.—p. 456.

*Changes in the small intestine associated with deficiency disease. T. T. Mackie and M. A. Mills.—p. 480.

*Further observations on the clinical use of vitamin K. J. F. Weir, H. R. Butt and A. M. Snell.—p. 485.

GLUCOSE ABSORPTION. Glucose meals of 5.4%, 13.5% and 25% concentration were instilled into the stomach through a single lumen tube. Glucose meals of high concentration were undesirable because of the irritant action on the duodenal mucosa. The rate of gastric emptying decreases as the concentration of the meal above isotonicity increases. While the human stomach adds diluting fluids to ingested meals that are hypertonic, it is not the important diluting organ. The duodenum possesses a remarkable versatility in shifting from an absorptive organ for glucose when solutions of low concentration reach it from the stomach, to a dilution organ for solutions of high concentration.

DEFICIENCY DISEASES. There is a definite correlation between the incidence of the small intestine roentgenologic changes characteristic of deficiency disease, and indications of avitaminosis. The lack of the vitamin B complex may be responsible.

VITAMIN K. Inadequate intake of food containing vitamin K, impairment of absorption due to lack of bile in the intestine and a deficient intestinal absorptive surface, and hepatic injury may cause hypoprothrombinemia. The intravenous administration of vitamin K permits precise dosage, circumvents the variable factor of absorption and assures instant availability of potent antihemorrhagic substances.

American Journal of Diseases of Children

Vol. 60, November 1940

*Ascorbic acid content of cow's milk at various stages of lactation. A. D. Holmes, F. Tripp, E. A. Woelffer and G. H. Satterfield.—p. 1025.

*Anthropometry in children. Progress in allergic children as shown by increments in height, weight and maturity. M. B. Cohen, R. R. Weller and S. Cohen.—p. 1058.

*Obesity in childhood. IV. Energy expenditure of obese children. H. Bruch.—p. 1082.

ASCORBIC ACID IN COW'S MILK. The ascorbic acid content of Guernsey and Holstein milk rose rapidly during the first 2 months of lactation and then decreased to the eleventh month. The average monthly values for ascorbic acid in Guernsey milk during the first 10 months varied from 19.39–21.49 mg. per 100 cc. In Holstein milk the variation was from 15.68–18.85 mg.

ANTHROPOMETRY. Allergy is only one of the many conditions which may disturb the growth pattern. No child can be considered healthy who fails to achieve suitable and regular increments in height, weight and maturity.

OBESITY. The energy requirements for basal metabolism, for growth or for specific dynamic action are not lower in the obese than in the normal child nor is the mechanism of transformation of energy during muscular activity abnormal. Seventy-six per cent of the boys and 68% of the girls studied were physically inactive. Marked delay in ability and willingness to take care of themselves was observed in 77% of the 160 children. Bodily movements of most obese children were slow. Food intake and muscular activity have an opposed emotional value.

American Journal of the Medical Sciences

Vol. 200, November 1940

The effect of nicotinic acid on blood coagulation. R. M. Calder and G. P. Kerby.—p. 590.

*Intubation studies of the human small intestine. XV. The absorption and expulsion of glucose from the stomach. R. Warren, W. G. Karr, O. D. Hoffman and W. O. Abbott.—p. 639.

*The relation of phosphorus to fat and glucose metabolism in sprue. F. M. Hanes.—p. 661.

*Endemic riboflavin deficiency in infants and children. T. D. Spies, W. B. Bean, R. W. Vilter and N. E. Huff.—p. 25.

GLUCOSE ABSORPTION. When concentrated glucose solutions are ingested, a certain amount leaves through the stomach wall during the first short period of contact. The rate at which glucose leaves the stomach is usually influenced by the volume and concentration of the solution ingested but this varies in the same and in

different individuals. The stomach and duodenum may often complete the absorption of glucose.

GLUCOSE METABOLISM IN SPRUE. Sprue patients do not exhibit the normal fasting diurnal variation in phosphorus excretion. After ingestion of olive oil there is an increase in urinary phosphorus excretion with no significant change in serum inorganic phosphorus. After the ingestion of glucose the serum phosphorus decreases much more slowly and the urinary phosphorus excretion is much greater than in normal individuals. Sprue patients have a slow rate of intestinal absorption.

RIBOFLAVIN DEFICIENCY. Studies on 241 infants and children having characteristic riboflavin deficiency show it to be the most common clinical deficiency disease among infants and children in a certain area where deficiency diseases are endemic. Mothers usually subsisted on inadequate diets during pregnancy and lactation. Specific treatment of the mothers was curative for the nursing infant. Liver, lean meat and milk are added to the general diet whenever possible.

American Journal of Public Health

Vol. 30, November 1940

Illness due to commercially prepared egg and olive sandwiches contaminated by a probable carrier of hemolytic staphylococcus aureus. J. C. Geiger and A. B. Crowley.—p. 1351.

*More strength for the staff of life. Editorial.—p. 1359.

STAFF OF LIFE. Despite the perennial declaiming of nutritionists in favor of whole grain products, white bread always has been and probably always will be preferred by the vast majority of consumers, who appreciate its easy digestibility, superior flavor and taste, finer appearance, and its unique value as an economical source of necessary food energy. All consumers should be encouraged to demand the new and advanced type of bread, enriched in vitamin B_1.

Archives of Internal Medicine

Vol. 66, November 1940

*Diabetes mellitus and syphilis: A study of two hundred and fifty-eight cases. L. T. McDaniel, H. H. Marks and E. P. Joslin.—p. 1011.

*Influence of thiamine on blood sugar levels in diabetic patients. R. E. Kaufman.—p. 1079.

DIABETES AND SYPHILIS. After a careful study of 258 patients with diabetes and syphilis, the authors are not able to recognize the characteristics of such a clinical entity as "syphilitic diabetes".

THIAMIN IN DIABETES. Statistical analyses of the variations in the blood sugar levels in 10 well-controlled diabetic patients receiving a daily dosage of 1000 U.S.P. units thiamin for 5–8 weeks, indicate that the variations are due to chance and not to any specific factor. The use of this vitamin is not indicated as a routine measure for diabetic patients.

Archives of Pediatrics

Vol. 57, November 1940

Varying manifestations of thyroid gland dysfunction in infants, children and adolescents. C. G. Kerley.—p. 694.

*Suprarenal gland and lactose in the treatment of major allergic disorders in childhood—A clinical evaluation. S. D. Lockey.—p. 724.

ALLERGIC DISORDERS. Whole suprarenal gland concentrate, plus lactose by mouth, was used in the treatment of 163 cases of major allergic disorders of childhood (eczema, asthma, hay fever) during a period of 18 months with a clinical improvement in about 82% of the cases. In bronchial asthma the frequency of attacks was reduced. When attacks did occur they were more mild and did not last long. Practically all of the children who received gland and lactose therapy gained weight. Suprarenal gland and lactose therapy alleviated the symptoms of hay fever. Children who received this medication felt better, gained weight and had more energy.

Hygeia

Vol. 18, November 1940

*Teeth. C. J. Foster.—p. 973.
*Rice products.—p. 993.
Fruit in the diet. D. W. McCray.—p. 996.
*Avocados. H. M. Fyler.—p. 1006.

TEETH. Mouth acidity may be controlled by limiting sweets and pasty carbohydrates that adhere to the tooth surface. Vitamins A, C and D together with calcium and phosphorus are necessary for good teeth. Some hard food should be taken to provide exercise for the teeth.

RICE. Rice is Asiatic in origin. Although 97% of the world's annual rice crop is produced in the Far East, some is produced in the southern part of the United States. The per capita annual consumption of rice in the United States is only 6 lb. whereas in China it is 300–400 lb. Brown rice has only part of the bran removed. It does not keep as well as white rice so is slightly more expensive. Brown rice contains 4 times more vitamin B_1 and 3 times more minerals than white rice. Accepted rice products are listed.

AVOCADOS. Our largest supply of avocados is grown in California and Florida. "Calavo" is a trade name compounded of California and avocado, and "Flavo" is compounded of Florida and avocado. California ships a crop in winter and spring, Florida in summer and fall. The avocado comes to market in many contours and colors but the green ones are considered superior. The fat content varies from 7 to 26% and is 94% digestible. The calcium and phosphorus content is greater than that of many fruits, and the iron content relatively high. Some varieties contain vitamins A, B_1, D, E, and G.

Journal of the American Dental Association

Vol. 27, November 1940

Studies in tooth development: the growth pattern of human teeth. I. Schour and M. Massler.—p. 1778.
*Has it been proven that sugar is a significant factor in dental caries? F. B. Hopkins.—p. 1801.

SUGAR IN CARIES. Sugar is a significant factor in dental caries. Theories as to its action are still unproved. The cause of dental caries is unknown.

Journal of the American Medical Association

Vol. 115, November 2, 1940

Public health aspects of rheumatic heart disease: Incidence and measures for control. H. F. Swift.—p. 1509.
*Control of diabetes mellitus: Relation to the healing of clean and infected wounds and to incidence of infection in clean wounds. J. A. Greene, L. W. Swanson and C. A. Jacobs.—p. 1518.
*The effect of alcohol on vision: An experimental investigation. Z. W. Colson.—p. 1525.
*Riboflavin in the tubercle bacillus. Current comment.—p. 1550.

Vol. 115, November 9, 1940

*Psychotic and somatic interrelations. W. F. Petersen and H. H. Reese.—p. 1587.
Determination of physical fitness. H. H. Kessler.—p. 1591.
*Experimental human scurvy. Editorial.—p. 1637.

Vol. 115, November 16, 1940

*The spontaneous hypoglycemias. J. W. Conn.—p. 1669.
*Transfusion of bone marrow. M. Morrison and A. A. Samwick.—p. 1708.
*"Jug station" milk. Editorial.—p. 1724.
*Lack of provitamin A in flour. Current comment.—p. 1725.

Vol. 115, November 23, 1940

*Neurogenic factors in the production of acute gastric ulcer. R. S. Boles and H. E. Riggs.—p. 1771.
Recurrent peptic ulcer. A. B. Rivers and J. W. Gardner.—p. 1779.
A case of trichinosis presenting chemosis of the bulbar conjunctiva. L. Lehrfeld and C. F. Breisacher.—p. 1794.

Vol. 115, November 30, 1940

*Alcohol and thiamine. Current comment.—p. 1890.

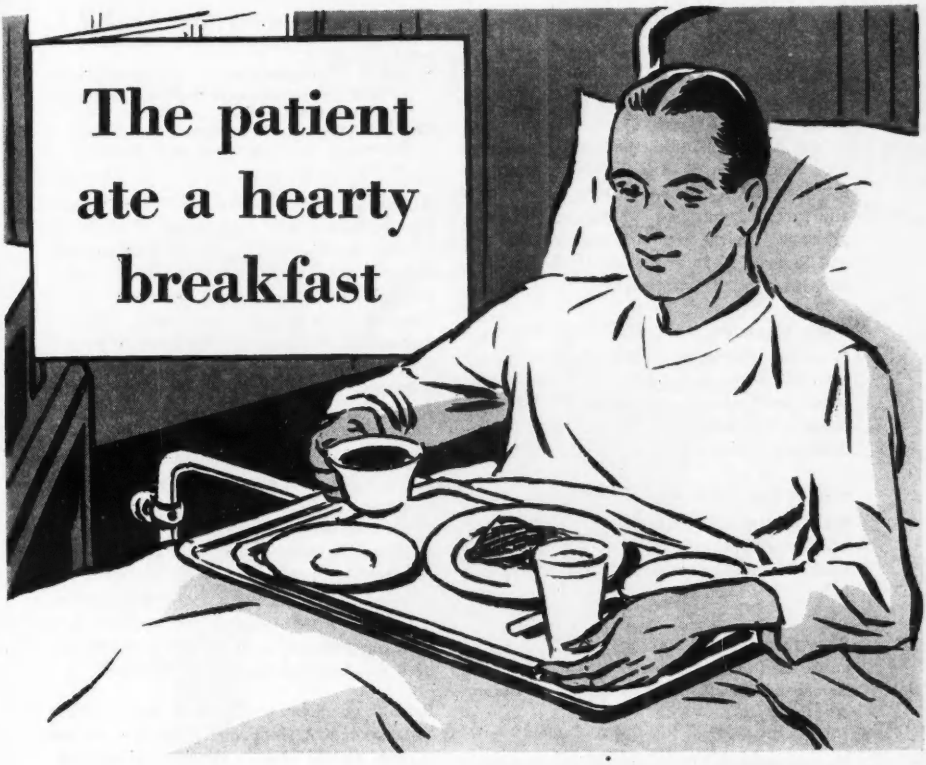
DIABETES MELLITUS. There is no relationship between the height of the blood sugar level and degree of glycosuria and the incidence of delayed healing of wounds or of infection in originally clean wounds in cases of diabetes mellitus. The lower utilization of dextrose and the greater degree of arteriosclerosis are possible causes for this higher incidence.

VISION AND ALCOHOL. Visual tests following the consumption of alcohol by 21 normal individuals showed no diminution of visual acuity, visual fields or color vision.

RIBOFLAVIN IN TUBERCLE BACILLUS. The yellow fluorescent pigment formed by the tubercle bacillus is identical with riboflavin.

PSYCHIC ALTERATIONS. The moods of the normal person and the shifting psychic picture of the psychotic patient reflect, in varying degrees, the change in weather, modified by many other forces, such as the sexual cycle, physical and mental activity, diet, infection, trauma and emotional situation. The effects of weather are most significant.

SCURVY. A completely observed case of human scurvy under careful clinical, metabolic, chemical and dietetic control is described. The approximate human requirement of vitamin C is 30–45 mg. per day.



THOSE are cheering words; cheering to the cook, the dietician, the nurse, *and* the patient. One of the small but important things that help to improve patients' appetites is bright, gleaming tray service.

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HYPOGLYCEMIAS. In organic hyperinsulinism it is necessary to feed a diet high in carbohydrate giving meals as frequently as is required to prevent attacks. In functional hyperinsulinism a diet high in protein and low in carbohydrate is indicated. A diet high in both carbohydrate and protein seems best for hepatogenic hypoglycemia. In the pituitary and adrenal type and in renal glycosuria a diet high in carbohydrate is usually sufficient.

BONE MARROW. An unknown factor present in normal marrow when injected intrasternally may stimulate maturation of hematopoietic constituents already present in the diseased marrow, thus supplying a factor to overcome a deficiency disease.

MILK. The sale of raw milk continues in spite of the greater safety in pasteurized milk. There is no established evidence that raw milk is any more desirable nutritionally than pasteurized milk.

PROVITAMIN A IN FLOUR. Both bleached and unbleached flours are meritorious foods but are devoid of or insignificant as sources of vitamin A activity.

GASTRIC ULCER. "Neurogenic" ulcer is a focal expression of subclinical generalized circulatory insufficiency, initiated through stimulation of the central vegetative mechanism by primary intracerebral disease. In the absence of primary intracerebral disease, changes in the vegetative nervous system resulting from circulatory insufficiency may exert a neurogenic influence in ulcer production.

THIAMIN AND ALCOHOL. The rather narrow margin of safety in the modern American dietary with respect to adequacy of vitamin B_1 can be greatly decreased or largely erased by the consumption of alcohol. The metabolism of the alcohol calories increases the need for thiamin which the alcohol itself cannot provide.

Journal of Biological Chemistry

Vol. 136, November 1940

*A rat assay method for the determination of riboflavin. J. R. Wagner, A. E. Axelrod, M. A. Lipton and C. A. Elvehjem.—p. 357.

*The factor V (coenzymes I and II) content of rat tissues: evidence for synthesis of nicotinic acid by the rat. W. J. Dann and H. I. Kohn.—p. 435.

*The effect of sodium chloride on the glucose tolerance of the diabetic rat. J. M. Orten and H. B. Devlin.—p. 461.

RIBOFLAVIN. A riboflavin-low ration suitable for riboflavin assays with the rat is described. Vitamin B_1, B_6, and nicotinic acid are supplied in pure form and the remainder of the B complex is supplied in riboflavin-low liver extract. When this ration is supplemented with adequate amounts of riboflavin, normal rates of growth are obtained. With suboptimal amounts of riboflavin, the growth rate is proportionate to the amount of riboflavin fed.

FACTOR V CONTENT OF TISSUES. On 2 diets low in nicotinic acid the rate of growth of rats was not increased by adding nicotinic acid. The coenzyme level of the liver, kidney, and thigh muscle was decreased only about 10% by the deprivation of nicotinic acid. On one of the deficient diets the growing rats synthesized coenzymes at a rate utilizing more nicotinic acid than was ingested, showing that nicotinic acid itself was being synthesized by the rats.

EFFECT OF SODIUM CHLORIDE ON GLUCOSE TOLERANCE. A study of the effect of sodium chloride on the glucose tolerance of rats was made. In contrast to the typically diabetic tolerance shown to glucose alone, the tolerances of both types of diabetic rats were normal when glucose was administered with sodium chloride.

Journal of Clinical Investigation

Vol. 19, November 1940

*The effect of large doses of vitamins A, B, C and D on the incidence of upper respiratory infections in a group of rheumatic children. A. G. Kuttner.—p. 809.

*Carbohydrate metabolism in Addison's disease. G. W. Thorn, G. F. Koepf, R. A. Lewis and E. F. Olsen.—p. 813.

*Fat metabolism in diabetes. W. C. Stadie.—p. 843.

*Basal gastric secretion as a clinical test of gastric function with special reference to peptic ulcer. A. L. Bloomfield, C. K. Chen and L. R. French.—p. 863.

VITAMINS IN RESPIRATORY INFECTIONS. A carefully controlled study of 108 rheumatic children showed no evidence that the addition of large doses of vitamins A, B complex, C, and D to an ordinary well-balanced diet reduces the incidence of upper respiratory infections. Chil-

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TODAY—two months after their introduction—Blodgett Streamlined Baking and Roasting Ovens are breaking every sales record in Blodgett's 99-year history. The reason? **Record-breaking performance in actual service!**

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dren in the control group showed approximately the same weight gain as those in the group given additional vitamins.

CARBOHYDRATE METABOLISM IN ADDISON'S DISEASE. A high proportion of patients with Addison's disease were observed to have a disturbed carbohydrate metabolism. Experimental data suggests that the adrenal cortical hormone increases the ability of the organism to form glucose and glycogen from intermediate products of both carbohydrate and protein metabolism and in this manner regulates the utilization of carbohydrate. Patients with Addison's disease should be provided with a diet high in readily available carbohydrate to prevent hypoglycemia.

FAT METABOLISM IN DIABETES. Fat metabolism in diabetes in its relation to ketonuria is discussed. Experimental evidence favors the replacement of the successive beta oxidation hypothesis of fatty acids by the multiple alternate oxidation hypothesis and shows that the diabetic animal utilized ketone bodies in the periphery abundantly and independently of carbohydrate oxidation.

GASTRIC SECRETION. Measurement of basal gastric secretion has definite diagnostic value. Basal acidity in patients with duodenal ulcer often exceeds the highest control values. In gastric ulcer basal activity is similar to the controls. The high value for basal acidity in duodenal ulcers remains essentially unchanged after the ulcer is healed.

Journal of Nutrition

Vol. 20, November 1940

*Relation of pantothenic acid to the filtrate fraction of the vitamin B complex. M. K. Dimick and A. Lepp. —p. 413.

*A comparison of the nutritive values of raw, pasteurized and evaporated milks for the dog. H. D. Anderson, C. A. Elvehjem and J. E. Gonce.—p. 433.

*The distribution of the "grass juice" factor in plant and animal materials. S. B. Randle, H. A. Sober and G. O. Kohler.—p. 459.

*The influence of lactose on calcium retention in children. R. Mills, H. Breiter, E. Kempster, B. McKey, M. Pickens and J. Outhouse.—p. 467.

*Placental and mammary transfer of vitamin E in the rat. K. E. Mason and W. L. Bryan.—p. 501.

PANTOTHENIC ACID FILTRATE. Synthetic pantothenic acid will cure or prevent an experimentally produced nutritional dermatitis in chicks but it does not represent the whole factor referred to as the "filtrate factor" since it produces a growth response below that obtained with rice bran concentrate. Pantothenic acid is an important part of factor 2 ("rat filtrate factor"). It promotes growth of rats, cures the reddening and swelling of the eyelids which develop on a factor 2-deficient diet, improves the skin condition and decreases greying of the fur; it does not completely restore hair color nor does it completely prevent greying.

NUTRITIVE VALUE OF MILKS. Whole raw milk supplemented with iron, copper, manganese and cod liver oil, allowed good growth and reproduction (2 gestations) in fox terrier dogs. When evaporated milk was fed under similar conditions most of the young showed either muscle dystrophy or a hemorrhagic condition of the pericardium, lungs, and brain. Vitamin E was effective in curing or preventing the dystrophy but did not prevent the hemorrhagic condition. The young born to the female on fortified pasteurized milk showed some signs of dystrophy and hemorrhage. Deficiencies were only produced by repeated pregnancy and lactation since all the milks supported good growth of males for almost 3 years.

GRASS JUICE FACTOR. Animal tissues are a poor source of the "grass juice" factor. The amount in plant tissues varies considerably. The young rapidly metabolizing plant tissues are much richer in this growth-promoting substance than the older and more mature plant material. Dehydrated cereal grass, rye grass, young white clover, peas, pea shells, cabbage, turnip tops and spinach are the best sources. The factor is labile to oxidation.

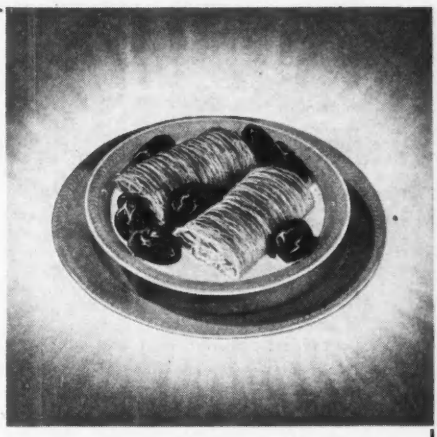
LACTOSE AND CALCIUM METABOLISM. Calcium balances were determined in 5 boys (5 to 7 years). A supplement of 36 gm. lactose was added to the control basal diet containing 500 mg. calcium. The percentage retention of calcium was higher during the lactose period.

PLACENTAL AND MAMMARY TRANSFER OF E. Placental transmission of vitamin E in the rat is exceedingly limited. The vitamin is much more readily transferred through the mammary gland to the milk. Findings are discussed in

In this Breakfast . . .

VITAMIN B_1

as Nature provides it



ACCORDING to authenticated research, two National Biscuit Shredded Wheat with a cupful of milk provide more than ⅓ the average daily adult requirement of Vitamin B_1, or nearly ½ the average child requirement. When sliced bananas or other fruits are added, the one-dish breakfast affords additional food value.

In addition to this important vitamin, the meal contains the other vital nutrients of whole wheat. The biscuits are 100 percent whole wheat, including the Wheat Germ. Nothing is added to the whole grain, which is steam cooked, pressed into slender strands (for readier assimilation in the system), then baked crisp and brown.

When a warm cereal is desired, the same well rounded breakfast can be prepared easily, by dipping the biscuits quickly into a pan of hot water, draining, and serving with hot or cold milk. Or by splitting the biscuits, toasting lightly in the oven, dotting with butter and serving with top milk or cream.

National Biscuit Shredded Wheat, because of its pleasant, unobtrusive flavor, is useful in encouraging increased intake of milk in cases where there is a milk deficiency in the diet.

Through more than forty-five years in millions of homes, billions of National Biscuit Shredded Wheat breakfasts have been enjoyed.

Baked by "NABISCO"
NATIONAL BISCUIT COMPANY
Address: New York, N. Y.

NUTRITIONAL VALUES

Analyses show the following nutrients *naturally* present in 2 National Biscuit Shredded Wheat served with a cupful of milk:

VITAMIN B_1	More than 1/3 the daily average requirement
CALCIUM	More than 1/3 the daily average requirement
PHOSPHORUS	More than 1/2 the daily average requirement
IRON	More than 1/5 the daily average requirement

There is also a generous part of the daily energy requirement (CARBOHYDRATES and PROTEINS) and other nutritional necessities including VITAMIN A and VITAMIN G.

relation to the experimental production of vitamin E deficiency and to the placental and mammary transmission of other fat-soluble vitamins.

Journal of Pediatrics

Vol. 17, November 1940

*The comparative nutritive efficiency of intravenous amino acids and dietary protein in children with the nephrotic syndrome. L. E. Farr, K. Emerson and P. H. Futcher.—p. 595.

Vitamin K in hemorrhagic disease of the newborn infant. C. E. Snelling.—p. 615.

INTRAVENOUS AMINO-ACIDS AND DIETARY PROTEIN. Replacement of 33 to 57% dietary protein nitrogen with nitrogen furnished by casein hydrolysate given intravenously, increased slightly the efficiency of nitrogen utilization and within this range of substitution indicated that casein hydrolysate completely replaced dietary protein. Intravenous administration of casein hydrolysate is recommended as the primary therapeutic procedure in the treatment of nephrotic crises complicated by bacteriemia.

Public Health Nursing

Vol. 32, November 1940

Dental care for the preschool child. L. W. Morrey.—p. 671.

*Jewish dietary laws and food customs. B. Cassel.—p. 682.

JEWISH DIETARY LAWS. Jewish people have wandered into all parts of the world, and their diet is probably more varied than that of any other people. The Jewish custom of using cheese, eggs, dark breads and cereals, potatoes, cabbage, the dried fruits, dried legumes, fish, and the cheaper cuts of meat is to be encouraged. More fresh vegetables and liquid milk should be used.

Public Health Reports

Vol. 55, November 8, 1940

Accidents in the urban home as recorded in the national health survey. R. H. Britten, J. Klebra and D. E. Hailman.—p. 2061.

Vol. 55, November 15, 1940

*Studies of the acute diarrheal diseases. IV. An outbreak of bacillary dysentery due to the "Newcastle dysentery bacillus". A. V. Hardy, S. Frant, S. W. Jarcho and E. G. Schlosser.—p. 2101.

ACUTE DIARRHEAL DISEASES. An explosive outbreak of 97 cases of bacillary dysentery occurred in a hospital in New York and involved nurses chiefly. The infection was evidently spread by food contaminated by an undetected carrier in the kitchen of the nurses' home. Evidence tended to incriminate salad dressing.

Rocky Mountain Medical Journal

Vol. 37, November 1940

*Obesity—its significance and treatment. C. F. Kemper.—p. 835.

OBESITY. The problem of obesity is one of great concern to doctors. Obesity is preventable and curable. Safe, scientific programs for weight reduction are advisable. Mild and severe reduction diets are outlined.

Science

Vol. 92, November 15, 1940

*Vitamin B_1. J. Stafford.—p. 9.

Vol. 92, November 29, 1940

*Feline pellagra. M. K. Heath, J. W. MacQueen and T. D. Spies.—p. 514.

VITAMIN B_1. The depressing effects of tropical heat can be overcome by doubling the daily intake of vitamin B_1. A large part of dietary thiamin is found in the protein foods that are unconsciously avoided in warm climates because of their specific dynamic action. Without thiamin the oxidation of burning glucose stops midway.

FELINE PELLAGRA. A nutritional deficiency in cats was dramatically relieved by a daily oral dose of nicotinic acid. The cats had lost weight, refused food, appeared weak, sluggish, apathetic, and usually the head hung much lower than the rest of the body.

INSTITUTION MANAGEMENT

Buildings and Building Management

Vol. 40, December 1940

*Operating efficiency. D. W. May.—p. 46.

OPERATING EFFICIENCY. Discusses the operating efficiency of an apartment house in relation to overheating, night temperatures, vacuum equipment, stokers, fuel, coal, domestic hot water and plumbing, and electrical equipment. Saving of fuel can usually be made in mild weather by watching the temperature closely. A few degrees of overheating may increase the

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And that's particularly true of Continental Coffee because it is a blend of extra-strength . . . extra-richness . . . and full satisfying flavor. It relieves nervous strain, gives a lift to fatigued minds and tired bodies. Yet with all its exceptional deliciousness and full-flavored satisfaction, Continental Coffee is more economical to serve . . . *it actually costs less per cup!*

So serve Continental Coffee . . . the balanced blend especially prepared for hospital use . . . and save by its economy.

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fuel bill as much as 25%. A recording thermometer can be purchased for around $12–$15 and the charts sent to the office. Where 24-hour heating is required in only certain portions of the building, it is good practice to install separate heating mains to supply these portions. The installation of vacuum type equipment will often increase the efficiency of the heating plant materially. Hot water tanks should be sized so that the peak load will not require over 75% of the tank capacity because of the time it takes to heat the water if the tank is filled, or nearly filled, with cold water.

Consumer's Guide

Vol. 7, October 1940

*Certified A-B-C grades make their bow.—p. 2.
More strength to your meat dollar.—p. 6.
Milk glossary for consumers, Part III.—p. 10.

CANNED GOODS GRADES. U. S. certified grades on the products of five selected canneries will appear for sale in some of the large cities this winter through the innovation of a new service making available a U. S. inspector on constant duty in the canneries during operations. Such canneries are entitled to use on their labels the following legends: U. S. Grade A, U. S. Grade B, or U. S. Grade C. Somewhere on the labels of these foods there is an additional statement, "This product was packed under the continuous inspection of Agricultural Marketing Service, U. S. Department of Agriculture, and the above grade officially certified." Of the five plants selected to test this innovation, one is located in Michigan, one in California, one in Florida, and two in New York. The products to go out on the trial run are canned corn, sweet and sour cherries, pears, peaches, tomatoes, apricots, fruits for salads, fruit cocktail, and tomato juice.

Food Industries

Vol. 12, December 1940

*Britain fortifies its food.—p. 37.
*Goes vacuum pack one better.—p. 39.
*Mass production methods put to work. P. O. Mercer.—p. 40.
*Tests of enzyme converted corn sirup reveal desirable properties. P. H. Tracy and G. Edman.—p. 43.
Better dust control needed. M. Levine.—p. 50.
Chance to remove trade barriers when state lawmakers convene.—p. 54.
*Sure it's a good law, but not for everybody.—p. 54.
*Cold pack standards suggested by amendment.—p. 55.
*Will domestic freezers help or hurt frozen foods?—p. 55.
Unusual truck applications in the food industries.—p. 56.
*Have cake and icing too.—p. 58.
*From bulk to consumer size.—p. 58.
*Add no sugar.—p. 58.
*Digest of A.M.S. standards for canned vegetables.—p. 59.
*Three years of progress in food freezing methods.—p. 63.
*Frozen foods directory.—p. 66.
*The case for fine flours.—p. 108.
*Problems of concentrating fruit juice.—p. 108.
*Cottage cheese grading.—p. 108.
*Thiourea to prevent browning of fruit considered safe.—p. 110.
*Value of lards for deep frying.—p. 111.
*Foaming of frying fats.—p. 111.
*Vitamin E as an antioxidant.—p. 112.
*Composition of fresh and salted fish.—p. 114.
*Bleaching stained oranges.—p. 115.
*Color in potato chips controlled by reducing sugars.—p. 115.
*Effect of cooking on eggs.—p. 115.

FORTIFYING FOOD. Robert Boothby, parliamentary secretary to the Ministry of Health, announced that Britain plans to fortify white bread by the addition of ½ gm. B_1 in the form of aneurin (thiamin chloride) and 100 gm. of calcium to each sack of flour at the mill or in case of imported flour before distribution to bakers. Aneurin is inert and stable, does not affect dough, volume of loaf or consistency of crumb. Present cost of aneurin is over $5000 a pound. Mass production will diminish costs to 1/20 of a penny per 2 lb. loaf. Average adult man's requirement of B_1 is approximately 300 I.U. a day. The 1 lb. white loaf made from flour of 70% extraction gives 80–160 I.U. vitamin B_1 while that made from flour of 80–85% extraction yields 300–450 I.U. This is the first step in a scientifically planned national food policy. A precedent has been set by adding iron—extremely deficient in the British diet—and calcium to bread.

COFFEE PRESSURE PACK. Pressure packing of coffee by the new "Tone" process is said to maintain flavor even longer than vacuum packing. It is an extended application of vacuum packing: 1½ hours after roasting, coffee is weighed into cans and fed by a conveyor to the processing machine which subjects the coffee to two alternate applications of vacuum and pressure; 80% nitrogen and 20% carbon dioxide and carbon monoxide are used to replace the exhausted air, and the cans are sealed at a pressure slightly above atmospheric. Reapplication of vacuum and pressure theoretically reduces the air content to 7¼ parts per million.

The Newer Concepts of Meat in Nutrition

Meat
AND THE PROBLEM OF
Daily Tissue Repair

AS shown by the investigations of Folin[1], the metabolism of protein is of two distinct kinds—endogenous and exogenous. The former occurs at a constant rate in adults and represents the replacement of protein tissues which are broken down in the processes of living. In the exogenous metabolism of protein, which is variable and depends upon the amount of protein ingested, the amino acids resulting from protein digestion are utilized for energy purposes.

In practical nutrition, the food intake must be so adjusted that sufficient protein is provided to satisfy the requirement of endogenous metabolism or "wear and tear" replacement. Experimental studies have shown that this requirement is constant, regardless of physical activity. The older concept that muscular energy must be provided by proteins is now known to be erroneous, since carbohydrates are the principal source of muscular energy. However, ingestion of protein in amounts greater than needed for "wear and tear" replacement results in deamination of the excess which is then utilized for energy purposes.

In recent years the concept of the nutritional value of proteins has received increasing attention. The endogenous metabolism of protein can take place normally only if the protein foods ingested provide the necessary or essential amino acids. Thus studies on the amino acid content of proteins[2] have proved of value in the calculation of satisfactory diets. They not only show the importance of specifying the quantity of protein needed, but also reveal the kind of protein foods required to assure adequate amounts of the essential amino acids.

In their studies on hypoproteinemia, Ravdin et al[3] discuss the importance of maintaining the serum protein content safely above the edema level. Preoperative and postoperative protein feeding aids in maintaining a normal serum protein concentration, facilitates wound healing, "protects" the liver against the adverse influence of anesthesia, and makes for a smoother convalescence.

The proteins of meat contain all of the ten essential amino acids in approximately the proportion required by man. Thus meat is able to satisfy the protein requirements when fed to the exclusion of all other sources of protein.

1. Folin, O.: A Theory of Protein Metabolism, Am. J. Physiol. *13*:117, 1905.

2. White, A., and Gordon W. G.: Basic Amino Acids Yielded by Thyroglobulin, Proc. Soc. Exper. Biol. & Med. *32*:354 (Nov.) 1934.

3. Ravdin, I. S.; Stengel, Alfred, Jr., and Prushankin, Mitchell: The Control of Hypoproteinemia in Surgical Patients, J.A.M.A. *114*:107 (Jan. 13) 1940.

The Seal of Acceptance denotes that the statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
CHICAGO

OYSTER PRODUCTION. Modern straight line production methods applied to the old established oyster industry have improved sanitation and working conditions and produced economical operation as well as economical first cost in the new oyster packing plant of the Bluepoints Company Inc., Long Island. Pivoted unloading conveyors move oysters from boats to the inclined conveyors which take them to the cull bins. Openings in the bins allow the oysters to fall onto work tables where they are graded for shipping in the shell. Baskets containing the oysters are attached to a chain trolley conveyor which carries them through a bath of chlorinated water and cold water rinse. Oysters in the shells are tightly packed in barrels to prevent damage. All opened oyster meats are placed in 1 gal. monel metal pots to avoid metallic contamination and for sanitary control. After washing and inspection they are drained and graded according to size. Oysters are hand packed into lithographed compression lid cans, sealed, and placed in refrigerated storage. Quick freezing of oysters is done by packaging in paperboard boxes and then placing between the freezing plate of the unit. Shipping refrigeration is effected with solid carbon dioxide.

NEW CORN SIRUP. A new sweetening agent, enzyme-converted corn sirup containing dextrose, maltose, and dextrine, has a sweetening value of approximately two-thirds that of sucrose when used in frozen dairy products or a maximum sucrose replacement of one-third for ice cream and one-half for sherbets and ices. The sirup depresses the freezing point to a greater extent than an equivalent amount of sucrose solids but to a lesser degree than dextrose because of lower molecular weight of the latter. No undesirable effects are noted on mix, color, viscosity or melting resistance of the ice cream. It aids in prevention of surface crustation in water ices and sherbets and results in a higher body score. Tested water ice and sherbet formulas using the sirup are included.

MILK LAWS. Laws limiting minimum fat content in milk are good laws but even good laws sometimes work hardship. After careful consideration of food costs, a perfectly planned and well balanced meal is being served to the students in a North Richville, Ohio, school. This meal sells for 8 cents and therefore 3½% milk was too expensive to include. However, through cooperation with the local dairies and with the consent of Dr. Martha Koehne, the state nutritionist, 2% milk is served. No nutritional element is lost in so doing because whole wheat bread and butter is always served. Higher per cent of proteins and minerals in this milk causes no nutritional loss even to the child who thus supplements a lunch brought from home.

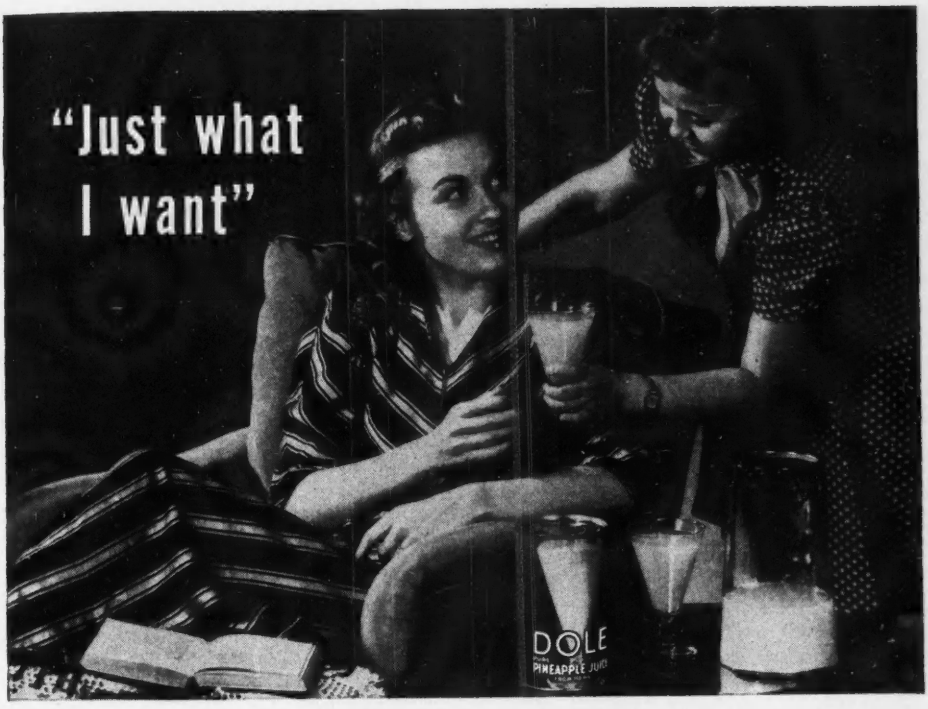
COLD PACK STANDARDS. The amendment reads: "Until such time as official marketing grades by the United States have been promulgated and are in effect, for the purpose of administration and regulation, the kinds and grades of cold pack fruits shall be stated as far as applicable (1) in accordance with federal standards or (2) in absence of federal standards in accordance with state, or (3) in absence of state, in accordance with standards adopted by cold pack fruit organization, or (4) in absence of aforesaid standards, any standards approved by the chief of the service."

REFRIGERATORS. Growing acceptance of frozen food appears to promise a large market for domestic refrigerators planned to freeze foods in the home. Technology of food freezing has established freezing temperatures of −20°F. to produce rapid freezing, with a holding temperature of 0°F. Domestic refrigerators have a temperature of 10–15°F. Frozen foods held at 10–15°F. permit vitamin C to be dissipated in half the time, or less, than would be the case if 0°F. were the holding temperature. The cost of operating and results obtained by the proposed domestic refrigerators may slow down their acceptance in favor of commercially frozen foods.

CAKE MIX. Prepared cake mix and icing are now available in one complete package. Devil's food, fudge, white, golden and prune preparations have been introduced by the Red-EE Foods, Los Angeles.

TURKEY. Pine Bridge Farm introduces smoked turkey paste packaged in 4-oz. glass jars, as a cocktail party tidbit or spread.

CEREAL. "Zes-tees", a prepared cereal product made entirely from the whole grains with added malt, requires no added sugar.



Rare indeed is the convalescent who does not welcome the refreshing goodness of Dole Pineapple Juice. Because it is pure, wholesome and easily assimilated, Dole Pineapple Juice is an excellent addition to the convalescent diet. No sugar is added. Dole Pineapple Juice is just the pure, unsweetened juice of top quality, fully sun-ripened pineapples. It is a good source of vitamins B and C, and contains A.

The fine flavor and nutritional values of Dole Pineapple Juice are the result of painstaking, scientific care, beginning with the preparation of the soil. Mulch paper is laid in strips on cultivated fields, and young plants are set out through the paper. The mulch paper keeps soil warm and moist, and prevents weed growth, thus helping to maintain ideal growing conditions.

(In writing to advertisers, please mention the journal—it helps.)

VEGETABLE STANDARDS. Standards for canned fruits and vegetables recently issued by the Agriculture Marketing Service, include tentative standards for canned asparagus, beets, carrots, and tomatoes.

FOOD FREEZING. Today successful freezing is dependent upon proper variety of raw material, harvesting at proper state of maturity, prompt handling between harvest or slaughter and preparation of product for freezing, proper preparation of raw material for freezing, prompt freezing, rapid freezing, proper packaging and storage. Reviews various methods of freezing, i.e. sharp freezing, air blast, tunnel, single-contact, double-contact, sprag or fog, block-ice and immersion freezing, and also the unclassified methods.

FROZEN FOODS DIRECTORY. The directory lists all companies engaged in packaging frozen foods of all kinds and by all methods, and includes plant location, company and brand name, products frozen, size containers used, system of freezing, output in 1939 and 1940, and intended output in 1941 in pounds.

FINE FLOUR. Doughs from two flours of different degrees of fineness were tested on a small Chopin extensometer to ascertain the influence of fineness on baking quality. Physically, the fine flour has more uniform particle size and offers direct contact of each particle with water. The coarser flour contains large heterogeneous particles, including starch aggregates which are broken up in the finer flour. These factors contribute to the superior baking quality of fine flour.

FRUIT JUICE. Grape juice concentrated by vacuum evaporation raised to a specific gravity of 36–37° Baumé keeps well, whereas at lower specific gravities it ferments readily. Concentrates for wine should be acidified when diluted for fermentation, and dilution should leave the juice richer than the original. To correct concentrates for beverage grape juice to suit the taste, add Seltzer water. Well-lacquered or varnished wood is used for storing grape juice concentrates. To prevent fermentation before evaporation, about 0.3–0.4% of sulphur dioxide is added to the fresh juice followed by an additional 0.6% the next day if the juice is to be kept some weeks.

COTTAGE CHEESE GRADES. Analysis of cottage cheese has shown that the fat content is related to the dry matter content. If one increases, the other does also. Cottage cheese should be graded as low, medium, and high-fat products. The minimum dry matter content should be 20, 23 and 26%, respectively. Actual content, however, should be 1% above the stated minimum. Excessive watering should be avoided. Thus, in making a medium-fat cheese from curds and cream, no milk should be added since it would only increase the water content unnecessarily.

THIOUREA. Following extensive feeding experiments, "thiourea" is considered entirely safe and harmless for use by man. If fruits and vegetables for drying, cut fruit for salads, or sliced potatoes and pie fruits are dipped into water containing 0.05% thiourea, surface browning is prevented.

LARD. A recent study of the physical and chemical characteristics of lards and other fats in relation to culinary value has been made at Iowa State College. The purpose of the third bulletin on the frying characteristics was to compare the frying life of lard and other fats when used under household conditions. On the basis of this work, the following recommendations are made: "Lard should be more uniform in consistency, odor, performance, and in chemical and physical constants; a method of rendering lard should be developed which removes the objectionable odors; if lard is sold by grades, the better grade should be of smooth consistency; the smoke point of a frying fat should be high enough so that the fat does not smoke when it is used for short periods at a suitable frying temperature; the free fatty acid content (as oleic acid) should be below 0.3%; the peroxide value for each fat should be low; the iodine value of a first-grade lard should be below 75."

FATS. A beaker-scale test was used to determine the foaming characteristics of many commonly used frying fats and oils. Results indicate time and temperature are the main factors in the breakdown of an oil which causes it to foam. Hydrogenated oils have a greater resistance to foam than the original oils from which they were produced. In general there is a fair correlation between the increase in the

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Special diets can't stump this VERSATILE RANGE!

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IF one of your problems is serving from a variety of diet kitchens where changes in menu are frequent, here is your answer! The Brawny Lad's custom-top range can be tailored to your diet kitchen needs. Its quick, clean preparation of food insures satisfying, appetite-waking food on each tray — draws enthusiastic praise from patients, makes your work so much easier. It is priced at about the level of a good domestic range, but what a man-sized cooking job it does! May we send you full information? Edison General Electric Appliance Co., Inc., 5692 W. Taylor Street, Chicago, Ill.

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EDISON Hotpoint

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refractive index and viscosity of a shortening material and the tendency to foam.

ANTIOXIDANT. Vegetable oils are rich in vitamin E (tocopherol). Isolated vitamin E in its three pure forms (*alpha, beta,* and *gamma* tocopherol) upon addition to animal fats in small amounts acts as a stabilizer (antioxidant) for these fats. Synthetic vitamin E has about the same stabilizing action on lard as the natural vitamin. The tocopherols are found to have greater stabilizing ability than the hydroquinones from which they are prepared.

SALT VERSUS FRESH FISH. Chemical analyses of certain salted fish showed highest protein content in perch (28.6%) and lowest in bleak (20.4%). Perch was the lowest in fat (1%) and mackerel the highest (25.4%). In fresh fish the variability was less, the lowest protein content in bream (15.5%) and the highest in sheat-fish (22.1%). Bream and mackerel were the fattest (7.4%) while pike had the least fat (0.6%).

BLEACHING ORANGES. Oranges stained by a fungus known as "sooty blotch" can now be bleached effectively by using a solution of 3.2 oz. sodium bicarbonate per gallon of water.

BROWNING POTATO CHIPS. Tests have revealed that the reducing sugars present in potatoes actually control the color of potato chips. A low reducing sugar content yields the best chips. Tests with eleven varieties showed Chippewa Carman 3, Irish Cobbler and Katahdin potatoes give good chip color under most conditions; Russet Burbank, Blue Victor, Early Ohio and Spaulding Rose are somewhat richer in reducing sugar and chips may sometimes be too brown; Bliss Triumph and Green Mountain usually produce chips that are too brown; while Russet Rural potatoes are low in reducing sugar and are difficult to brown without excessively high cooking temperatures.

EGG DIGESTIBILITY. Digestibility test confirmed the idea that hard-boiled eggs are hardest to digest among cooked eggs. Poached, soft-boiled, and lightly fried rank highest in digestibility. Protein waste in frying is due to inability to estimate the grease temperature. Waterglass eggs are recommended for seasonable economy under certain conditions of the market since loss in food value is small.

Hospital Management

Vol. 50, November 1940

*A.D.A. meeting features many discussions of practical value to hospital dietitians.—p. 49.

A. D. A. MEETING. A report on the A.D.A. convention outlining sessions which are of especial value to the dietitian in the hospital field.

Hospitals

Vol. 14, December 1940

*Improper dishwashing is a health menace.—p. 48.
*Price trends of hospital commodities. McGill Commodity Service, Inc.—p. 74.

IMPROPER DISHWASHING. A report by the Safety Research Institute giving rules for temperature and effective detergents.

PRICE TRENDS. A survey of the price trends of foods, and factors that influence hospital commodity prices. Groceries, meats, and vegetables are fluctuating within narrow limits, while dairy products are advancing. Inflationary characteristics will be produced by the national defense program.

Hotel Management

Vol. 38, December 1940

*Pictorial bedmaking manual.—p. 21.
*Training for maid service.—p. 28.
*"Continental buffet" is distinctive and different type of food service. M. E. Bridston.—p. 34.
*Equipment news for December.—p. 42.

BEDMAKING. A pictorial presentation of the proper steps in making a bed as brought up to date by Mrs. Margaret Connelly, executive housekeeper of the Astor Hotel. These pictures are to be reproduced in a series of slides so that they may be used by the various chapters of National Executive Housekeepers Association for local programs. They would also be valuable in employee training in college residence halls and small hospital housekeeping departments.

TRAINING MAIDS. Number three in a series of detailed training outlines available for hotels, restaurants, hospitals, clubs, and associations, deals with the training of maids.

VEGEX
BREWERS YEAST EXTRACT
VITAMIN B COMPLEX
EXTRINSIC FACTOR
MARMITE

A Dependable, Palatable and Economical Source of the Complete Vitamin B Complex

VEGEX, the autolyzed extract of brewers yeast, supplies the whole of the vitamin B complex. It is for this reason, from the days of the first World War through extensive research in child feeding, the promotion of lactation, gastro-intestinal and similar disorders due to a deficiency of the B vitamins, that Vegex has been and still is used in nutritional and medicinal research.

The postulated extrinsic factor needed in the treatment of certain types of anemia was demonstrated with Vegex.

Tasting like meat extract but meat free, Vegex has wide, palatable food use, adding a distinctive flavor to soups, stews, vegetables, etc. Vegex is economical for daily use.

Special prices to hospitals, schools and cafeterias.

A jar of Vegex and literature will be sent on request.

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ELECTRIC MEAT, FISH AND BONE CUTTER

The "Jim Vaughan" is gaining popularity among leading dietitians. There are many reasons why this modern piece of equipment is rapidly taking its place in the hospital kitchen.

The Saving of Meats. The uniform and controlled cutting of meats, fish, and other meat products on "Jim Vaughan" result in equal and more portions. Users claim savings of 5 to 20% on their meat bills.

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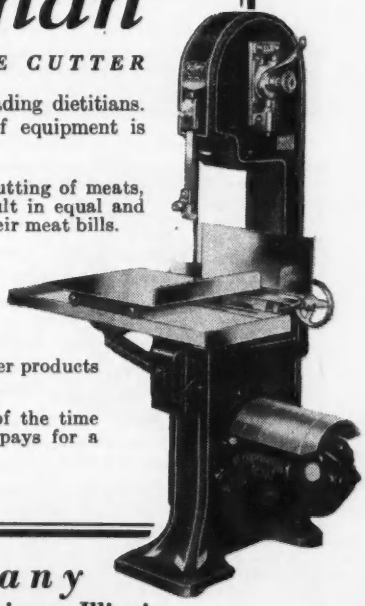

"Jim Vaughan" Company
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CONTINENTAL BUFFET. A new and distinctive type of food service was introduced by a department store in Seattle to reduce operation costs. Cafeteria service plus a combination of smörgåsbord and tea-room service makes this buffet unique. Colorful costumes worn by the waitresses and decorative tablecloths add atmosphere while the delectable casserole dishes, salads, and dessert specialties attract 7000 guests each month.

NEW EQUIPMENT. A new ice crusher mounted on a stand cracks 100-200 lb. of ice in any desired size by means of an adjustable grater. A new stainless steel coffee urn, the "Vanguard," has a finger-tip operation and is automatically controlled. The "Marso" silver bath effectively detarnishes silver, and a "Marso" china bath removes metal and other stains from china, porcelain, and enameled surfaces. A new linowall product is advantageously used for restaurant walls, as mild soap-suds remove dirt and ordinary stains. A new electric machine, "Norman Slicer," slices julienne string beans quickly and evenly; stainless metal knives prevent stains and rust.

Hotel Monthly

Vol. 48, November 1940

*"Cane" seats that are strong as steel.—p. 24.
*A new dishwashing machine cured two evils. W. J. Schill.—p. 26.
*Building menus to sell food. A. Shircliffe.—p. 28.
*Menus from the Shircliffe collection.—p. 30.
Are your engineering costs higher than they should be? —p. 33.
National restaurant association holds 22nd annual meeting.—p. 36.
*University and college dining hall operators talk shop. —p. 38.
*Food service at Cornell.—p. 39.
*For storage of frozen foods.—p. 57.
*The newest in ice-cubing.—p. 59.

SEATS AS STRONG AS STEEL. Chemists have produced a new material, "Saran", which is being used extensively for seat coverings in hotels and other similar institutions. It resembles cane or rattan, is "as strong as steel", easily cleaned, fire-proof, and very durable. The material is available in an extensive color range.

DISHWASHING. By replacing an obsolete dishwashing machine with a new Colt Autosan dishwashing machine, one hotel manager was able to cut down electric load in the kitchen, eliminate a bottle-neck in his food service, and increase available working space in his dishwashing department without encroaching on any of the other kitchen departments.

MENUS THAT SELL. This article tells how daily menus should be arranged in order to have the greatest sales appeal. The menu of the day should be dated. The specials for the day should be given a place of prominence on the menu in order to sell these dishes while they are of optimal palatability. Placing the daily specials in the most conspicuous position also helps regular customers to make their selections quickly. When it seems advisable to offer the daily specials as part of a fixed-price meal and also in à la carte portions, a second column for the à la carte prices of such dishes should be added. The daily menu cannot carry a too limited offering and expect to retain the patronage of a great number of people of varied tastes and means. Certain dishes must be present on a high class menu even though they do not "pay their way." The menu which offers only money-making dishes, not necessarily those which the customers want, will never be successful.

MENUS. Copies of two menus from the Shircliffe collection include the oldest à la carte American menu in existence, that of the Franklin Cafe and Restaurant, Philadelphia, 1840; and the other, the Louis Sherry Restaurant, New York, January 18, 1903.

UNIVERSITY AND COLLEGE DINING HALLS. "Twenty-eight institutions with an average enrollment of 7800 were represented in the university and college dining hall operators shop talk periods at the National Restaurant Association." The discussions concerned the number of meals served, investment involved, and care taken in selecting equipment and provisions.

CORNELL FOOD SERVICE. The manager of the residential halls at Cornell University believes that one of the most difficult things confronting the person in charge of a college dining room is the planning of well balanced menus, attractive to taste and with eye appeal. To balance food costs, dishes are served less expensive in ma-

A *Natural* WAY TO INCREASE *Vitamin B_1* INTAKE

Most nutritionists agree that the American people should receive their needed vitamins from natural foods rather than from pharmaceutical preparations.

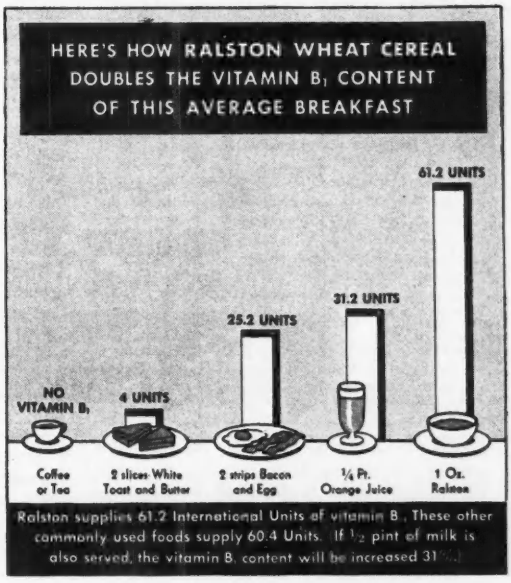
Current medical opinion agrees on this important fact: The widespread use of over-milled, "over-civilized" foods among all classes makes vitamin B_1 (thiamin) deficiency a challenging nutritional problem.

The accompanying chart shows how Ralston Wheat Cereal helps to increase the vitamin B_1 content in the daily diet. Made from whole wheat—with only coarsest bran removed—and enriched with natural wheat germ, Ralston more than doubles the vitamin B_1 content of the usual breakfast.

In addition, Ralston supplies the essential carbohydrates, proteins, iron and phosphorus of whole wheat in their natural and most desirable state.

Most important, Ralston is a delicious hot wheat cereal that appeals to young and old alike. And since it cooks in 5 minutes, costs only a penny a serving, Ralston provides an easy economical way to increase natural vitamin B_1 intake.

FREE: New illustrated 20-page bound book, "Whole Wheat and Its Importance as a Natural Source of Vitamin B_1." To get copy, send your name and address to Ralston Purina Company, 933C Checkerboard Sq., St. Louis, Mo. (Offer limited to U. S. A.)


HERE'S HOW RALSTON WHEAT CEREAL DOUBLES THE VITAMIN B_1 CONTENT OF THIS AVERAGE BREAKFAST
NO VITAMIN B_1
4 UNITS
25.2 UNITS
31.2 UNITS
61.2 UNITS
Coffee or Tea
2 slices White Toast and Butter
2 strips Bacon and Egg
¼ Pt. Orange Juice
1 Oz. Ralston
Ralston supplies 61.2 International Units of vitamin B_1. These other commonly used foods supply 60.4 Units. If ½ pint of milk is also served, the vitamin B_1 content will be increased 31%.

Ralston puts the B_1 in Breakfast

terials, more expensive in time, but always made of the best quality ingredients.

FROZEN FOODS STORAGE. A new "Arctic Trunk" provides temperatures ranging between 5° above and 15° below zero for storage of frozen foods in hotel kitchens and pantries. It operates on 110 volt A.C., 60 cycle current.

ICE-CUBING. An improved ice-cubing machine will cube a 200 to 280 lb. block of ice per hour, depending upon the size of the unit in use.

Journal of Home Economics

Vol. 32, December 1940

*Home economists in a community health education program. L. S. Morgan and B. H. Kneeland.—p. 657.
Needs of leaders in adult homemaking programs. L. M. Foster.—p. 665.
*The housewife is the doctor. H. Robinson.—p. 668.
Serving family life through community activities in housing projects. D. I. Cline.—p. 672.
*Tentative revision of the syllabus of home economics. IV. Food and nutrition.—p. 676.
*Nutrition at the A.P.H.A. M. M. Heseltine.—p. 681.
*The march past. K. Emerson.—p. 682.
What sort of hose in 1941? M. B. Hays and E. C. Petersen.—p. 683.
*The effect of different cooking methods on the vitamin C content of quick-frozen vegetables. J. A. McIntosh, D. K. Tressler, and F. Fenton.—p. 692.
*"Operation of school lunch projects."—p. 716.

COMMUNITY HEALTH PROGRAM. The successful progress of a long-range community health education program in Hartford, Connecticut, points the way to possibilities for home economists in initiating similar programs in their own communities. Factors utilized in popularizing the campaign include demonstrations, exhibits, audio-visual materials, radio programs, planned publicity, mass meetings, home hygiene classes and research. The necessity for planning, cooperation and coordination of various community group activities is emphasized.

AMERICAN HOUSEWIVES. That "the American housewife is the American advertiser's most valuable customer" is proved in the millions of dollars spent per year by American advertisers on daytime radio advertising designed for an audience almost 90% women. The popularity of the 5-time-a-week dramatic strip is analyzed and its influence on sales promotion explained for the benefit of the steadily increasing number who object to this type of entertainment. A brief discussion of Crossley ratings and cooperative analysis of broadcasting reports is especially interesting.

SYLLABUS REVISION. A tentative revision of the food and nutrition division of the syllabus of home economics should prove helpful as a subject matter outline at various educational levels.

NUTRITION AT A. P. H. A. A report of the 69th annual meeting of the American Public Health Association, Detroit, October 8–11, indicates that nutrition is assuming a position of major importance. Considered as possibly the most significant development in this section was the favorable action on the statement of minimum qualifications for nutrition consultants proposed by the committee on professional education. Such action gives nutritionists "official recognition as professional health workers."

THE MARCH PAST. Dr. Emerson stresses the necessity for periodical health examination. Constant guard against exposure to tuberculosis, especially of children, and prompt insistence on x-rays in suspected cases, will mean much toward the final eradication of this disease.

VITAMIN C CONTENT, VEGETABLES. A study of several cooking methods and their effect on vitamin C content of several quick-frozen vegetables showed "vitamin C retention to be highest in all vegetables when cooked in the pressure saucepan." It is also reported that in cooking less vitamin C was destroyed in the quick frozen than in the fresh vegetables. Cooking utensils and methods, chemical determinations and results are discussed and summarized.

SCHOOL LUNCH PROJECTS. A 94-page mimeographed circular covers the operation of school lunch projects and was prepared by home economics consultants of the WPA. Problems in preliminary planning, physical set-up, preparation and serving are among the topics discussed. Information for obtaining the bulletin free upon request is given.

Modern Hospital

Vol. 55, December 1940

*Food for thought.—p. 88.
*Nutrition and national defense.—p. 94.

Your Fixt Mixes are
GUARANTEED
against baking failures

● We guarantee *all* Fixt Mixes against any baking failures whatsoever, not caused by oven defects. They must be satisfactory or we refund the purchase price. Why? Because we know Fixt Mixes can't go wrong! They're made of the finest ingredients throughout, under strict laboratory control, then "bake-shop" tested under service conditions. Use them on your menu at *our* risk.

ATTENTION DIETITIANS!

Fixt Whole Wheat Chocolate Pudding is extra delicious and extra nourishing, yet easy to prepare and thrifty too. Write for free laboratory and ingredient analysis on your letterhead.

NOTHING TO ADD BUT WATER

Consult your local jobber or write Lew Wall direct.

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Eleven Correct Sizes—
One for Every Service

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Made of a special material, they combine in the greatest possible degree all the qualities needed in the ideal serving tray

Ask your equipment dealer—and *demand genuine CAFATRAYS*

CHELSEA PRODUCTS
281 11th Avenue, New York City

Food staples are kept in steel filing cabinet at St. Mary's, La Salle.—p. 96.
*Trays are light and durable.—p. 96.
Rhubarb canned without cooking.—p. 96.
Finds new dietitian needs reeducating on food cost.—p. 96.
*Housekeeper studies plumbing. E. G. Wagner.—p. 100.
*Pay cafeteria for nurses described at meeting of Kansas hospital group.—p. 118.

FOOD FOR THOUGHT. Dorothy DeHart, Roosevelt Hospital, New York, states that, labor and equipment factors considered, hospital-made ice cream is more satisfactory and less expensive than the ready-made product.

NUTRITION AND NATIONAL DEFENSE. Report of recent annual A.D.A. meeting stressed importance of nutrition in national defense.

LIGHT TRAYS. Light serving trays made of five-ply pecan wood will not break easily.

HOUSEKEEPER STUDIES PLUMBING. To attain cooperation with the maintenance department and maintain highest levels in caring for plumbing fixtures, the housekeeper should understand selection, care, repair, and cleaning of all equipment, and acquaint her staff with the problems.

PAY CAFETERIA FOR NURSES. Recommendation is given for pay cafeteria for nurses, describing plan for food tickets and the advantages of this type of food service.

Nation's Schools

Vol. 26, December 1940

Mary checks her diet. F. L. Hoag.—p. 27.
*Rural children start lunchroom. M. Keyser.—p. 64.
*Finds 15¢ plate is best seller. H. Siegel.—p. 66.
Food cost tables. Rice-polished; Macaroni-elbow; Cornstarch-pulverized. G. S. Saunders.—p. 66.
*Safe dishwashing technics. W. D. Tiedeman.—p. 68.

LUNCHROOM. The two most important goals of this school health program were personal hygiene and hot lunches. The benefits derived were: a better knowledge of the foods necessary for health; practice in menu planning; a knowledge of the materials needed for carrying on a hot lunch project; increase in vocabulary and information in regard to the source of foods; some knowledge of pleasing design and arrangement; raised standard of behavior by emphasizing order and quiet during the lunch period; and improved social and sanitary habits.

FIFTEEN-CENT PLATES. Fifteen-cent combination plates have proved most popular in the lunchroom of Evander Childs High School, New York. A list of the favorite school lunch dishes served and the plan used for the daily menu are included.

DISHWASHING. Good washing and rinsing of dishes are as important as disinfection. For safety, however, subsequent disinfection is essential, and for this purpose nothing quite equals immersion in hot water thermostatically maintained at a temperature of 170°F. or higher.

Practical Home Economics

Vol. 18, December 1940

*Training students of institutional management. F. Buente and K. Kilbourne.—p. 368.
A course in vocational household training. M. McMillin.—p. 369.
*The school lunch. M. Farnam.—p. 375.

INSTITUTIONAL MANAGEMENT TRAINING. In order that practical experience and theory may be effectively correlated, all of the food service of Detroit's Municipal University at Wayne comes under the supervision of the institutional management director. In the sophomore year the student sees the phases of service of the cafeteria, sandwich bar, table, and catering; in her junior year she studies quantity cookery and actually prepares the food with the cooks and learns about food buying and portion costs. The students have six weeks' training in a commercial restaurant. They study either food control and accounting, or practice in management, in their senior year.

SCHOOL LUNCH. In a broadcast at the Conference of Food Service Directors, Mary Farnam suggested that all school cafeteria directors invite the parents to eat in their children's lunchrooms so that they may see how good food may be served at moderate prices, and why they should stress well-balanced meals to their children. Prices of various dishes in the lunchrooms in Detroit are given. Dr. Lydia Roberts presents a well-balanced and adequate lunch for a school child which may be used as a sample for lunchroom directors. A description of an ideal counter and dining room is included.

When Supplementary Feedings are Ordered...

Nutritious, vitamin and mineral rich Ovaltine presents many advantages when supplementary feedings are ordered. Highly palatable, yet mechanically and chemically bland, it is readily accepted by the patient, even when many other foods are refused.

It is more easily digested than milk alone, since in its preparation the curd tension of the resultant mixture is greatly reduced. Hence no undue burden is imposed upon the digestive tract.

Three glasses of Ovaltine—the amount usually ordered daily—prepared according to directions, furnish 2578 I. U. vitamin A, 302 I. U. vitamin B_1, 491 Sherman-Bourquin units vitamin G, 327 I. U. vitamin D, 1.05 Gm. calcium, 0.903 Gm. phosphorus, 8.9 mg. highly available iron, and 0.75 mg. copper.

The proteins of this pleasant food drink are of high biologic value, its carbohydrate and well-emulsified fat are readily absorbed, and its diastatic action facilitates digestion of starches.

•

Dietitians are invited to send for a supply of individual servings of Ovaltine. The Wander Company, 360 North Michigan Avenue, Chicago, Ill.

NEW IMPROVED

Ovaltine

2 KINDS—PLAIN AND CHOCOLATE FLAVORED

Ovaltine now comes in 2 forms—plain, and sweet chocolate flavored. Serving for serving, they are virtually identical in nutritional value.

Restaurant Management

Vol. 47, December 1940

Restaurants in airport design.—p. 12.
*Dining rooms at the La Guardia airport.—p. 16.
Menu making for airline travelers.—p. 18.
Food preparation.—p. 22.
Food purchase specifications.—p. 27.
Food service specifications.—p. 30.
Standard beverage recipes.—p. 33.
California cookery.—p. 40.
Equipment news for December.—p. 44.

AIRPORT DINING ROOMS. The location, interior decorative features, the new equipment, seating capacity, the number and duties of the employees, prices and portion sizes of food orders are the topics of interest brought out in the discussion of the three restaurants at the La Guardia Airport—the Terrace Restaurant, Coffee Shop and Kitty Hawk Room.

EGG-SHELL PIE CRUST

The recipe calls for 100 lb. flour (soft winter wheat) and 70 lb. lard (best grade). By a little experimenting you can readily adapt this formula to utilize whatever shortening you prefer.

This lard should be steam rendered and not open kettle rendered lard. I am talking about that tough, or fibrous lard, not the mealy or grainy types that are better suited for bread or other purposes.

Mix the flour and lard together easy, leaving the lard in lumps the size of a lemon ro about half the size of your fist. Next dissolve: 3½ lb. salt, 5 lb. corn syrup, and 6 lb. egg whites in 32 lb. water.

Mix the egg whites, corn sugar, and salt into the water thoroughly.

Add this mixture to the mixed flour and lard, and mix together well. During the mixing stage, the large pieces of lard are flattened out or broken up. There should be some lard spots throughout the finished dough. However, they should not be larger in size than the end of your thumb. If the spots of lard are any larger, continue mixing the dough until they have been broken up to the proper size.

Place the dough in the refrigerator and chill just enough so the dough will pass through the dough roller, or roll by hand—whichever method you prefer, without sticking. This dough should be used the day it is made and not held overnight in the refrigerator.

Here is a tip for the summer months: Due to the low melting point of lard, it is sometimes a little hard to handle, or it may mix in this dough too rapidly. You may find it difficult to maintain the necessary lumps during the mixing stage. However, this difficulty can be overcome by refrigerating the flour. Carry enough flour in the refrigerator for one week's supply, and each day as a part of this is removed, add to it to keep your refrigerator stocked at the same level.

Normally, it requires about a week to properly refrigerate the flour unless you have, of course, an exceptionally cold box. If the flour is cold when the lard is added, you can readily see that it will not start to melt as will happen when the flour is warm.

Again let me say, this is the finest pie crust I have ever seen or eaten, and hundreds upon hundreds, and even thousands of consumers who have tasted this crust have verified the above statement.—*Monroe Boston Strause, The American Restaurant Magazine, page 22, August 1940.*

HOT FOOD FOR BUSY DOCTORS AT ANY TIME OF DAY

. . . IS EASY WHEN YOU HAVE A TOASTMASTER WARMER!

Food grown cold is no food to serve to tired surgeons or nurses who've been busy through meal time—there's no need for it when you can keep everything deliciously piping-hot *for hours* in a TOASTMASTER Roll and Food Warmer. Just put in the food as it comes from the oven—on individual serving plates, if you wish—take it out any time later and it will look and taste just as fresh and appetizing as though cooked to order.

The miracle of the TOASTMASTER Warmer is that its heat principle (patented) doesn't *dry out* foods, preserves all the natural juices and tempting color of fried chicken, or meat loaf, or mashed potatoes . . . keeps hard rolls crisp, or soft rolls soft—several foods at one time, in one warmer. There's no installation cost and the smallest possible expense for current. Just plug it in, and TOASTMASTER Roll and Food Warmer is on the job for you . . . and for those you want to feed well.

Illustrated above is the popular 4-drawer model. Also made in 2, 3, and 5-drawer sizes with varying capacities, to fit every need.

SOLD BY LEADING FOOD SERVICE EQUIPMENT DEALERS

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ROLL and FOOD WARMER

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Elgin, Ill. Manufacturers of "Toastmaster" trademarked fully automatic Toaster, Bun Toasters, Roll and Food Warmers, Waffle Bakers.

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Send information about.....-drawer Toastmaster Roll and Food Warmers.

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Institution.....
Address.....
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NEWS NOTES

Mary I. Barber Drafted for Service in Washington, D. C. At the request of Army authorities, the Advisory Commission to the Council of National Defense has authorized the appointment of Mary I. Barber, President of the American Dietetic Association. Miss Barber reported for duty in the office of the Chief of Subsistence, Lieutenant-Colonel Paul P. Logan, in Washington on January 27. Further details concerning her work will appear in the March JOURNAL.

Student Dietitians Sought by War Department. The United States Civil Service Commission has announced open competitive examination for student dietitians for employment at the Army Medical Center, Washington, D. C. The salary is $420 a year, less a deduction of $360 a year for subsistence and quarters, and also a 3½ per cent retirement deduction.

Applicants for student dietitian positions must have completed a full 4-year college course leading to a bachelor's degree with major study in dietetics. Senior students now in attendance at institutions of recognized standing may be admitted to the examination subject to their furnishing during the existence of the eligible register an official transcript of their college credits as proof of completion of the required course prior to September 1, 1941. Applicants must have reached their twentieth but must not have passed their twenty-eighth birthday on the closing date for receipt of applications.

As a part of its promotional program the War Department has arranged that persons appointed from these examinations who successfully complete the 1-year training course for hospital dietitian at the Army Medical Center and who meet certain other requirements, will be eligible for retention in the service at a salary of $1,620 a year.

Applications must be on file with the U. S. Civil Service Commission at Washington, D. C., not later than February 24 if received from states east of Colorado, and not later than February 27, 1941, if received from Colorado and states westward.

Further information and application forms may be obtained from the Secretary of the Board of U. S. Civil Service Examiners at any first- or second-class post office, or from the U. S. Civil Service Commission, Washington, D. C.

Committee on Food and Nutrition of the National Research Council. Two prominent members of the A. D. A., Dr. Helen S. Mitchell, chairman of the Association's Journal Board, and Grace Bulman, 1939-40 chairman of its Administration Section, have been appointed to this committee. It was at the request of Miss Harriet Elliott, head of the Consumer Divislon of the Advisory Commission to the Council of National Defense, that the National Research Council of the National Academy of Sciences organized the committee to promote the development and application of nutritional science. A national program for improving nutrition is under the immediate direction of Mr. M. L. Wilson, Extension Service of the Department of Agriculture, who will be assisted by the Committee on Food and Nutrition of the National Research Council.

Membership in the group is as follows:

Executive Committee: Russell M. Wilder, chairman; Helen S. Mitchell, secretary; George R. Cowgill; Icie Macy Hoobler.

Members: John N. Black, Henry Borsook, F. G. Boudreau, Joseph S. Davis, C. A. Elvehjem, Philip C. Jeans, Norman Jolliffe, C. G. King, James McLester, S. C. Prescott, Lydia J. Roberts, W. C. Rose, Cullen Thomas, R. R. Williams, John B. Youmans.

Government Representatives: Grace Bulman, William DeKleine, Martha M. Eliot, J. K. Fuller, Colonel Paul E. Howe, E. M. Nelson, W. H. Sebrell, Louise Stanley, Commander Charles S. Stevenson.

Consultants: E. V. McCollum, John R. Murlin, Mary Swartz Rose, H. C. Sherman.

Ex-officio members include representatives of the divisions of the National Academy of Sciences.

Directors of Approved Training Courses, Student Dietitians. Gertrude McDonald, formerly of Peter Bent Brigham Hospital, is now at Beth Israel Hospital, Boston. Maniza Moore, formerly head dietitian at Beth Israel Hospital, is now head dietitian at Vanderbilt University Hospital, Nashville, Tennessee. Bonita Shart Simmons, formerly assistant dietitian, is now chief dietitian at Peter Bent Brigham.

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DIETARY FOODS

Company under the auspices of the American Dietetic Association, will be directly in charge of Lucille M. Refshauge, Mount Sinai Hospital, 5th and Reed Streets, Philadelphia. Constructive suggestions, therefore, from those who have used the book will be welcomed by Miss Refshauge, and any errors which may have been discovered should also be brought to her attention.

Clinical Congress to Sponsor Post-graduate Courses. Two post-graduate courses on industrial medicine and diseases of nutrition have been arranged under the auspices of the Connecticut State Medical Society. The courses are being given at the Yale School of Medicine commencing January 9 and continuing at weekly intervals through April 10. Speakers on diseases of nutrition include Drs. W. B. Castle, G. R. Cowgill, Norman Jolliffe, C. N. H. Long, and J. P. Peters. This subject will be discussed under the following subheads: "The Nature and Functions of Dietary Constituents"; "Carbohydrate Interrelations"; "Protein and Fat Deficiencies"; "General Characteristics and Properties of Vitamins"; "Water, Sodium, Iodine, Potassium and Magnesium in Health and Disease"; "Calcium, Phosphorus and Vitamin D"; "Vitamin B Deficiency"; "Vitamins A, C, K (P)"; "Iron and Hematopoietic Factors"; "Pathology of Dietary Deficiencies"; and "The Calculation of Diets".

Conference of Food Service Directors will sponsor the following studies for 1941: Serving Counter Specifications, chairman, Edna Gilbert, Youngstown, Ohio; Increasing Recipes, chairman, Bertha Nettleton, New York; Meat and Vegetable Portion Study, chairman, Mary Ballard, Springfield, Ohio; Residence Hall Study, chairman, Quindara Oliver Dodge, Boston; Time and Motion Studies, chairman, Jean Dunnigan, Detroit; and Lunchroom Nutrition Study, chairman, Helen Hobson, Cleveland. Interested members of the A. D. A. are invited to participate in these studies.

Food and Drug Administration. Two public meetings were held in January in connection with food standards under the Federal Food, Drug and Cosmetic Act. The first was held on January 13 and concerned proposed standards of identity, quality, and fill of container for canned fruit cocktail. The second hearing, relative to proposed amendments of the quality standards for canned apricots, peaches and pears, opened on January 16. The proposals were advocated by the Canners League of California and the hearings held at the request of this association.

The December summary of regulatory actions reports the seizure of mixed nuts, frozen fish fillets, canned salmon, diseased poultry, moldy canned blackberries, and tomato catsup because of the use of moldy tomatoes. Insect infestation accounted for the seizure of dried prunes, seedless raisins, dried apricots, canned pineapple juice, canned apple butter, macaroni and spaghetti, canned huckleberries, canned peas and candy.

Violations of an economic nature accounted for the seizure of fresh oysters adulterated with water, canned early June peas of substandard quality but not so labeled as required, low-fat creamery butter; misbranded frozen egg yolks, so-called olive oil and edible oil labeled as cottonseed and olive oil which were adulterated with an artificially colored and flavored soy bean oil.

Criminal actions involved food products and were concluded against companies distributing filthy dried prunes, diseased poultry which also contained water injected by means of a needle to increase the weight, canned early June peas adulterated with soaked dry peas, decomposed frozen eggs, decomposed shell eggs, low-fat butter, and short weight canned chicken tamales.

War Medicine—A New Publication. Beginning in January, the American Medical Association is publishing this new periodical as a part of its contribution to the preparedness program. The editorial board of the publication will consist of the members of the Committee on Information of the Division of Medical Sciences of the National Research Council, of which Dr. Morris Fishbein, editor of the *Journal* of the A. M. A., is chairman. The official reports of the A. M. A., through its Committee on Medical Preparedness, will appear in the new periodical, also material being developed by the Coordinating Committee on Medicine and Health of the Council of National Defense and by many other governmental agencies which are considering the national nutrition, the provision of hospital services and similar questions closely related to preparedness and defense. The new publication will appear as a bimonthly, with a subscription rate of $5 a year.

Important Data on Armour's Star Lard—

Lard is America's natural shortening choice. And Armour's Star Lard has won a high degree of acceptance by America's dieticians. There are several reasons for good Lard's popularity and fine performance...

a. It has the greatest shortening power of any of the plastic, edible fats.

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c. It is a thrifty shortening.

d. It is carefully prepared from selected fats, for uniformly high quality.

e. It is Texturated, for easier, better baking.

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Star Lard is refined from the selected fats of Government Inspected hogs. Only special body fats designated by the Bureau of Animal Industry go into Armour's Lards. Strict control of temperature, time, humidity means uniform high quality. In addition, star Lard is TEXTURATED. This exclusive process breaks down the fat particles to a velvety-fine consistency; means finer-textured baking.

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Another State Appoints a Supervising Dietitian. The State of Louisiana has appointed Mrs. Elva J. Kahrs, formerly of Touro Infirmary, as supervising dietitian with the Department of Institutions.

Director of Home Economics Appointed. Ellen Pennell, formerly director of Consumer Relations for the Associated Grocery Manufacturers of America, joined the National Biscuit Company January 1 as director of the Home Economics Division. Miss Pennell received her B.S. degree in home economics from Kansas State College where she taught home economics for one year and later accepted a position with Iowa State College and the U. S. Department of Agriculture as home demonstration agent. Her next appointment was with the Iowa State College staff as nutrition consultant, teaching nutrition and conducting food demonstrations throughout the state. Miss Pennell was subsequently editor of *Successful Farming* and home editor of *The Country Home Magazine.* The first cook book published for rural homemakers was one of her editorial achievements. Miss Pennell's work with the Associated Grocery Manufacturers of America consisted of setting up a twofold educational program: to interpret the story of the grocery industry clearly and constructively to the consuming public, and to inform manufacturers of the food habits, health interests and buying problems of the consumer. She is a member of the American Dietetic Association, American Home Economics Association, New York State Home Economics Association, New York State Dietetic Association, and the Advertising Women of New York.

Permanent Museum of Health. As the result of an agreement between the City of New York and the American Museum of Health, Inc., one of the permanent buildings in Flushing Meadow Park, site of the World's Fair, will be made into a free health museum open to the public every day of the year. Under the terms of its agreement with the city, the Museum will cooperate with the Department of Health and the Board of Education in "rendering a service in the field of health education and the instruction of the public in matters of public health, personal hygiene and the structure and functions of the human body."

Buffalo (New York) Dietetic Association met in November at the Millard Fillmore Hospital. Gertrude Eggers, personnel director at the Wm. Hengerer Company, was guest speaker after the regular business meeting. She explained the routine procedure in handling the employees. Each is rated periodically by the buyer and manager of each department, and individual abilities are evaluated and advancements made accordingly. She listed ten character traits and a code for checking each. The report from the Inter-Club Council was then read. A woman has been placed on the advisory board of the Vocational Education Department in Buffalo for the first time.

In December the association met jointly with the Home Economics Association at the Iroquois Gas Company where Mrs. Luella Fisher is Home Service director. Ruth Chambers of the National Livestock Association gave a demonstration on meat cuts and preparation, assisted by a butcher from a local meat packing company. Booklets on meat cuts were distributed to assist in identifying the cuts used in the demonstration. Ways of preparing less tender and unpopular cuts were emphasized. The dinner preceding the meeting was efficiently served by students of Buffalo State Teachers College.

Indiana Dietetic Association. A dinner meeting was held in November at Riley Hospital. Reports were given by members who attended the national convention.

Leone Pazourek, nutritionist with the Illinois State Board of Health, talked to members on "Every Dietitian a Community Educator," January 10. The meeting was held in Hurty Hall at the new State Board of Health Building on the Indiana University campus, with Estelle Nesbitt of the Indiana State Board of Health as chairman.

Grace Cunningham, graduate of Michael Reese and former dietitian at the Methodist Hospital, was married December 26 to Mr. Robert Lee. They are living at Columbus, Mississippi, where Mr. Lee is teaching.

Leah Bedwell, former staff member at Methodist Hospital, Indianapolis, is now chief dietitian at Nebraska University Hospital, Omaha.

Mrs. Verna McKinley, formerly chief dietitian at the Methodist Hospital, Indianapolis, is now living in Elmhurst, Illinois; Gene Cooper, former staff member, is now chief dietitian.

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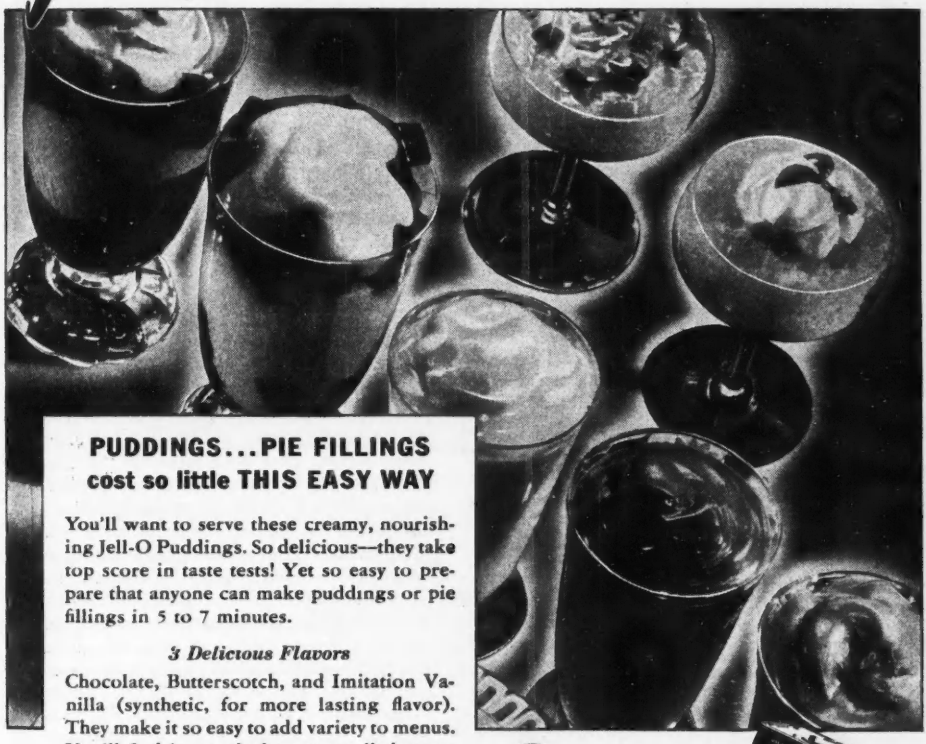

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New staff members at Methodist Hospital, Indianapolis, are Margaret Taylor, formerly of St. Luke's Hospital, Cleveland; Elizabeth Wolf, formerly of Marion General Hospital, Marion, Indiana; and Mrs. Irene Warder, formerly at City Hospital, Indianapolis.

Ethel Jones, formerly at Riley Hospital, Indianapolis, is now chief dietitian at Christ Hospital, Cincinnati.

Grace McMahan, formerly at Presbyterian Hospital, New York City, and Joan Duffey, graduate of Firmin Desloge, St. Louis, are now staff members at Riley Hospital.

Sina Faye Fowler, formerly of Kansas State College, and Elizabeth Albee are now faculty members of the Home Economics Department at Butler University, Indianapolis.

Mrs. Ava Martin Statelmyer, former staff member at City Hospital, is now living in Newcastle, Indiana.

Mrs. Elsie Trible DePonte, graduate of Wesley Memorial; Allene Sheldon, graduate of University of Minnesota Hospital; Reba Jan Silver, graduate of Michael Reese; and Melba Pfeiffer, graduate of Cincinnati General, are new staff members at City Hospital, Indianapolis.

Ruth Madsen and Joyce Nims, graduates of Riley Hospital, have accepted positions at Methodist Hospital, Gary, Indiana.

Mrs. Edith Bennett, graduate of Riley Hospital, has accepted a position at Witham Memorial Hospital, Lebanon, Indiana.

Iowa Dietetic Association. More than 40 members and guests attended the fall meeting on the Iowa State College campus Wednesday, November 20. Dr. P. Mabel Nelson presided at the coffee table where the group gathered following registration. At the business meeting announcement was made of the national convention at St. Louis, October 20-23, 1941, and that of the spring meeting of the state organization, April 21-23 at Des Moines in conjunction with the meeting of the Iowa Hospital Association. The remainder of the program was as follows: Reports of the national convention in New York by Edna Shalla; "Foods and Nutrition", Dr. Margaret Ohlson; "The Defense Program", Dr. Nelson; "Foods and Trips", Lenore Sullivan; "The Program of the Educational Director", Gladys Hall; "Trends in Food Costs", Fern W. Gleiser; and "Food Stamp Plan of Federal Surplus Commodity Corporation", Dr. Margaret G. Reid.

Juanita Kenefick, University Hospitals, Iowa City, was appointed to finish the unexpired term of Mrs. Phoebe Benson Hellwig as treasurer.

The nominating committee for the biennial election of state officers has been appointed by the president, Hazel Swim, as follows: Fern Gleiser, Iowa State College, chairman; Amy Standing, Iowa Methodist Hospital; Louise Allen, Iowa Soldiers Home, Marshalltown; Minna Wycoff, Coe College, Cedar Rapids; and Eunice Longworth, University Hospitals, Iowa City.

Frances Pringle, who was formerly at the Greene County Hospital, Jefferson, writes that she began work in Hawaii December 1.

The state association has followed the suggestion made at the national convention in voting to drop the word "state" from the name of the organization.

Massachusetts Dietetic Association held a dinner meeting at Perkins Hall, Women's Educational and Industrial Union, Boston, on December 3. Edith Barber, editor of the food column for the New York *Sun* and author of *Edith Barber's Cook Book*, talked on "Writing as a Hobby". It was a "hobby" dinner and between courses members were entertained by accounts of the various hobbies of the group. Mrs. Quindara Oliver Dodge of Simmons College entertained members with her stories and pictures of out-door life as a hobby. Dorothea Nichols of the State Department of Nutrition showed her rare collection of dolls. Charlotte Raymond, community nutritionist, Newton, told how she spent her spare time decorating wooden salad bowls and pine cones. Elizabeth Kingsbury and Diamond Ballan of the Pratt Diagnostic Hospital showed interesting block print Christmas cards and shell jewelry. Mrs. Beula B. Marble, former president of the association, urged women to take up gardening as a hobby.

Mrs. Bonita Simmons, formerly assistant administrative dietitian, Peter Bent Brigham Hospital, was advanced to the position of chief dietitian on January 1. Rose Burns, graduate student at the Peter Bent Brigham, will become her assistant.

Sarah Evans, assistant dietitian at the New

Memorandum for Dietitians

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England Deaconess Hospital, is resigning to be married in February.

Frances Fisher is returning to the New England Baptist Hospital as assistant dietitian.

Mrs. Cheslie D'Andrea is relieving for Miss Wright at the Massachusetts General Hospital.

Eleanor Wedburg resigned from the New England Medical Center on January 1 to be married early in the year to Mr. Arthur Kinnealy.

Dorothy Messeler, a graduate of the Massachusetts General Hospital student dietitian course, is now assistant dietitian at the Newton Hospital, Newton, Massachusetts.

Mary Lou Duncan is doing therapeutic work at the Presbyterian Hospital, New York.

Minnesota Dietetic Association will hold a Refresher Course, February 20–22.

Nebraska Dietetic Association. The annual meeting was held in Omaha November 15 and the following officers elected: president, Della Caster, Lincoln; president-elect, Leah Bedwell, University Hospital, Omaha; vice-president, Dorothy Whitehair, St. Catherine's Hospital, Omaha; secretary, Mrs. Bertha Fuller, State Hospital, Lincoln; and treasurer, Anna Streitz. The business meeting was succeeded by the following program:

Lydia Beck, Methodist Hospital, Omaha, Welcoming Address.

Dr. G. Alexander Young, Omaha, Nutrition in Psychiatric Patients.

Della Caster, Diabetic Camp Pictures.

Alma Bering, chairman, Legislative Committee, A. D. A., Status of Dietitians in Military Service.

Angeline Bantin, Omaha; Leah Bedwell, Omaha; Agnes Richling, State Hospital, Norfolk; Convention Reports.

Fern Gleiser, Iowa State College, Today's Challenge to the Dietitian.

Dr. Willis E. Brown, University Hospital, Omaha, Metabolism in Pregnancy.

Dorothy Whitehair, Menu Planning.

Agnes Richling, State Institutions.

Ruby Richardson, Omaha Public Schools, School Cafeterias.

Leah Bedwell, Private Patients.

Vesta Davis, St. Joseph's Hospital, was chairman of the exhibits, consisting of charts, posters, and menus.

Omaha dietitians held a dinner meeting November 3 at the Omaha Athletic Club, with Dr. Adolph Sachs, Omaha, as guest speaker. His subject, "Iron and Copper Metabolism", was illustrated with charts and films. The December meeting was a Christmas party at the home of Mrs. Alvin K. Boettinger.

New Jersey Dietetic Association. Mrs. Helen Hazen, Alberta Dent, and Harriet Stone are on the state Nutrition Committee that has been formed in conjunction with the National Defense Program. Asta Low Packard is on the Consumer Interest Committee.

Bernice Goldstein, formerly assistant dietitian at the Beth Israel Hospital, Newark, is now at the Veterans Hospital, Dayton, Ohio.

Ohio Dietetic Association held its second biannual meeting November 29–30 at the Gibson Hotel, Cincinnati, with the following program:

Melva Bakkie, nutrition consultant, American Red Cross; Ellen Ruthman, director of nutrition, Cincinnati Chapter, American Red Cross; and Eleanor Maclay, professor of nutrition, School of Household Administration, University of Cincinnati, A Red Cross Preparedness Program in Nutrition.

Dr. Richard Vilter, fellow in nutrition, Department of Internal Medicine, University of Cincinnati, Recent Studies in the Vitamin B Complex.

Student Dietitians of all Ohio Courses, Student Projects.

Eleanor Ahern, director of home economics, Proctor and Gamble, The Place of the Test Kitchen in a Commercial Organization.

Dr. Gustaf Eckstein, University of Cincinnati, The Senses.

Dr. Leon Schiff, assistant professor of medicine, University of Cincinnati, The Use of the Muelengracht Diet in the Treatment of Bleeding Peptic Ulcer.

Elizabeth Dyer, dean of the School of Household Administration, University of Cincinnati, The Dietitian Off Duty.

Betsy Curtis, Director of School Lunchrooms, Cincinnati, Mental Attitudes in Managerial Success.

During the business meeting, a new constitution was adopted. Except for a few minor changes it was the same as that recommended

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The history of Karo is inscribed in the nutrition of millions of infants. It reveals universal acceptance of Karo Syrup as an excellent source of dextrins, maltose and dextrose. Karo remains the effective milk modifier for all forms of milk and for every type of infant feeding problem.

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KARO IS, OF COURSE, STILL AVAILABLE IN THE FAMILIAR SANITARY TINS

by the American Dietetic Association for state associations. The secretary announced that the new members secured during the recent membership drive brought the membership roll to a record total of 120. The registration for the Cincinnati meeting was 168 members and visitors.

Philadelphia Dietetic Association. At the December meeting, held at the Philadelphia Electric Company, the members of the association and their guests, the Home Economics Women in Business, were instructed in the use and selection of bananas. Ina S. Lindman, director of Home Economics, United Fruit Company, was the speaker and Mrs. Ruth Laurance of the Experimental Kitchen, United Fruit Company, the demonstrator.

A trip through Horn and Hardart Baking Company in January proved most interesting and informative. Joan Larivee, head of the Menu Department of Horn and Hardart, acted as hostess to the group.

The January 28 meeting was in charge of the Hospitality Committee, headed by Ann M. Faucett. This, the annual midyear party, was held at the Institute of the Pennsylvania Hospital, and the proceeds from this annual affair go to the various welfare organizations of the city.

The first issue of this year's "Know News", a small pamphlet detailing the activities, both professional and social, of the Philadelphia Dietetic Association and its members, has been distributed by the Publicity Committee. Copies of the average weekly food cost for staples and the cost per week for the various special diets based on these figures have been made up and distributed to the members by the Special Diet Committee.

Pittsburgh Dietetic Association met at the Shadyside Hospital for its first meeting of the new year. Rena Eckman, Montefiore Hospital, led a round table discussion on problems common to the dietary and nursing departments in hospitals. It is hoped that another such meeting can be held with members of the League of Nursing Education.

A complete program has been distributed to the members of the association which also includes a list of the officers, the committee chairmen, and the entire membership.

Genevieve Malloy has returned to Pittsburgh from St. Elizabeth's Hospital, Covington, Kentucky, and is now administrative dietitian at Montefiore Hospital.

Margaret Boysen, former student dietitian at West Penn Hospital, has gone to the Ah-Gwah-Chaing State Sanatorium, Minnesota.

Betty Costello, formerly dietitian at the Ohio Valley Hospital, has gone to the Army Hospital at Fort McClellan, Alabama. Mary Sortore is now nutritionist for the Georgia Power Company with headquarters in Dawson. Both Miss Costello and Miss Sortore were Shadyside Hospital students.

Rochester (New York) Dietetic Association is contemplating a Refresher Course to be given in the spring, with Effie May Winger in charge of all arrangements. It is the hope of the association that the course will interest all food workers of the Genesee Valley.

The association held an exhibit in October for the Council of Church Women, which demonstrated the essential foods for a family of moderate income in keeping with the purpose of the National Defense Program.

In November, Miss Winger and her staff were hostesses to the Rochester association. Dr. Libby Pulsifer, a member of the General Hospital staff spoke on "Diets in Gastroenterology".

Newly elected members of the association are: Louise Blanchard, Eastman Dormitory; Edna Burns, St. Mary's Hospital; Mrs. Forth, Iola Sanatorium; Maybelle Sweeney, Y. M. C. A.; Marjorie Snyder, Batavia Women's Hospital; Dorothy Schuerch, Strong Memorial Hospital; Louise Roderick, Strong Memorial Hospital; Dorothy Craig, Highland Hospital; Mrs. T. L. Cairns, 1170 Genesee Street, Rochester; Ruth Smith, Gertrude Herman, and Dorothy Kingsley, Monroe County; and Lois Terck, Mechanics' Institute.

The association planned another series of radio talks under the auspices of the Medical Society of the County of Monroe, consisting of the following:

December 15, Adequate Meals, Gwendolyn Craver, chief dietitian, Genesee Hospital, introduced by Dr. David F. McGarvey.

January 12, Young America's Lunches, Constance Hart, director of School Lunchrooms, introduced by Dr. Lyman C. Boynton.

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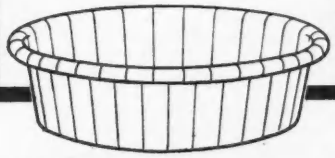

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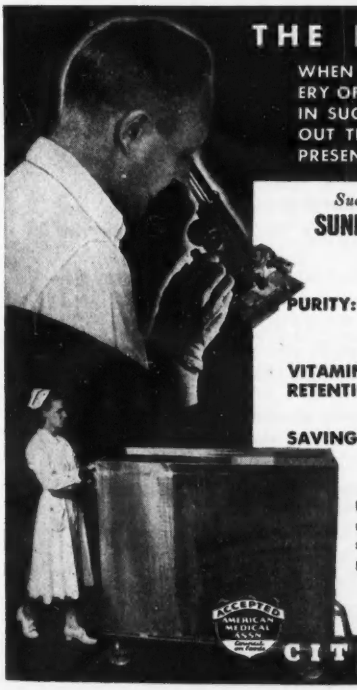

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THESE HIGHLIGHTS ARE IMPORTANT:

PURITY: No adulterants, preservatives or fortifiers are added to maintain true-to-fruit properties characteristic of freshly squeezed juices. No excessive peel-oil fraction . . . a common source of rancidity.

VITAMIN C RETENTION: Juice, after standing over night (10 hours) or more in reproduced form, retains a comparatively higher ascorbic acid content than freshly squeezed juice extracted by mechanical reamers.

SAVINGS: No fruit spoilage or shrinkage losses. No fluctuating fresh fruit market prices to consider. No waste disposal problem. Less burden upon refrigeration facilities. Minimum storage space required.

Institutions report SUNFILLED products to be a practical addition to economically planned menus. Serve these palatable juices, either orange or grapefruit, on routine menus . . . to staff and nurses on O.R. and special duty. Enjoy the substantial savings these quality products afford by reducing your per-gallon cost to: Orange 57c, Grapefruit 47½c.

Complimentary trial quantities to institutions on request.

CITRUS CONCENTRATES, INC.
DUNEDIN, FLORIDA

January 26, Buying Food for Adequate Meals, Elizabeth Henry, Visiting Nurse Association, introduced by Dr. Christopher Parnall, Jr.

February, Food in Relation to Teeth, Louise Roderick, Strong Memorial Hospital, introduced by Dr. Robert Galbraith.

February, Eating After the First Fifty Years, Lois Terck, Mechanics' Institute, introduced by Dr. Roger Allison.

March, Combating a Common Complaint, Effie May Winger, chief dietitian, Rochester General Hospital, introduced by Dr. Eli Leven.

Vesta Rauber, formerly of Monroe County Hospital, is attending Syracuse University.

Elizabeth Vaughn is attending the Food Clinic Course at the Boston Dispensary, conducted by Frances Stern.

Ruth Edwards is now Mrs. Ervay Jay Baker. Mrs. Baker was formerly connected with the Strong Memorial Hospital.

Grace Chamberlain, a former member of the General Hospital staff, is now at the Children's Hospital, Iowa City.

Utica (New York) Dietetic Association. Dietitians of Rome, New York, were hostesses to members of the Utica association at the regular monthly meeting in November at the Rome Hospital, with Florence Wye, Oneida County Hospital, and Virginia Matthews, Rome Hospital, in charge. The program included talks by Dr. Roy J. Marshall on "Diabetes and Protamine Zinc Insulin" and Dr. Rudolph E. Vandeveer on "Allergies." A discussion followed. After a business meeting, the dietitians were conducted on a tour of the new hospital by Mary C. Murphy, R.N., administrator.

Ruth Green has resigned as dietitian at Utica Memorial Hospital to take a position with Junket Folks, Little Falls.

Wisconsin Dietetic Association. The Wisconsin Advisory Nutrition Committee of Land-Grant Colleges consists of the following membership: Frances Zuill, chairman; Edith Bangham, Farm Security Administration; Lucile Billington, State Board of Health; Mary Brady, Home Economics Extension Division; Noble Clark, Agricultural Experiment Station; Asher Hobson, Agricultural Economics; Ada B. Lothe, Milwaukee County Institutions; Ruth E. Michaels, The Stout Institute; and Dr. Helen T. Parsons, University of Wisconsin. The first meeting of the committee was held at Frances Zuill's office at the University of Wisconsin.

The executive committee of the association has had several meetings, at one of which the annual convention was discussed and committee chairmen chosen for the year.

Doris Johnson, president-elect, has accepted a position at Edward Hines Hospital; and Frances P. Kelley, Veterans Administration Facility, has been transferred to Long Island, New York.

Wisconsin had 13 representatives at the American Dietetic Association meeting in New York. The same number were present at the Los Angeles convention.

The state convention is to be held at the Hotel Schroeder, Milwaukee, March 21–22.

The following members of the state association have announced new appointments: Edith B. Keesey is now at River Pines Sanatorium, Stevens Point. Katherine Lees has accepted a position at Kalamazoo College, Kalamazoo, Michigan. Dagmar Tuomin, Vanderbilt University Hospital, Nashville, Tennessee, and Norma Gunderson, John Sealy Hospital, Galveston, Texas, have been appointed to the staff of the Milwaukee County Hospital. Mary Agnes Bergin, formerly on the staff of the Milwaukee County General Hospital, is now at the Milwaukee County Hospital for Mental Diseases.

Winifred Loomis, Columbia Hospital, has announced her marriage to Mr. Darwin Larson, of Cedar Rapids, Iowa. Beatrice Borchard has replaced Mrs. Larson at Columbia Hospital.

Ethel Katz of Janesville was married August 18 to Mr. Harry Waisman of the Biochemistry Department, University of Wisconsin.

Doris Benedict, formerly of Columbia Hospital, was married September 28 to Dr. Russel Horsman and is living in Indiana.

Edith Massee, State Welfare Department, has been working on a study of delinquency throughout the state.

The October meeting of the Milwaukee Dietetic Association was held at the College Women's Club, Milwaukee. Dr. Marcos Fernan-Nuney, professor of pathology and bacteriology at Marquette University, spoke on the "Relationship of Diet to Cancer", illustrated with lantern slides.

The November meeting of the Milwaukee

"Save" a few cents with cheap dishwashing compounds—and up go your dishwashing costs where they're *greatest*—in labor, breakage, water, towelling, laundry! For cheap compounds are bound to turn out filmy-looking glasses, streaked dishes, spotty silver—which mean costly hand-towelling. The few cents per pound such compounds "save" are quickly lost in extra dollars spent for increased dishwashing overhead!

Time and again, in actual test cases, thousands of dollars have been saved in dishwashing department overhead by a switch to Super Soilax and Super Soilax Service. They have eliminated the extra work made necessary to get really clean dishes with cheaper compounds. They have done away with towelling, hand-scouring, re-washing. They have prevented scale, grease, and odors in dishwashing machines . . . stopped clogging, reduced "cleanouts".

Investigate! Write Economics Laboratory, Inc., St. Paul, Minn. Representatives, warehouse stocks in 32 principal cities.

SUPER SOILAX

FOR MECHANICAL DISHWASHING OF CHINA, GLASS, SILVER

(In writing to advertisers, please mention the journal—it helps.)

association was held at Karl Ratzsch's Restaurant, Milwaukee, with Ada B. Lothe, Milwaukee County Hospital, as chairman of the program. Mrs. Karl Ratzsch displayed some of the most interesting pieces in her collection of glass. Reports of the American Dietetic Association convention were given by Ada B. Lothe, Agnes Walish, Catherine Coffey, Ethel Keating, Breta Griem, and Ella Liner Lambert.

The December meeting was a Christmas party at the Y. W. C. A. Rachel Ruffner, director of the food service, Y. W. C. A., and the homemakers of the organization were hostesses.

The Milwaukee HEWIBS held a dinner meeting in November at Breta Griem's home. Annette Snapper reported on the effect of color on the choice of foods, using colored slides. In December the HEWIBS met at Marie Feind's home, where Christmas customs, decorations and traditions, were discussed by different members.

An address, "Menace of Filled Milk?" was given by Professor E. B. Hart, University of Wisconsin, at the annual meeting of the Wisconsin Home Economics Association, November 7. Susan F. West, Milwaukee Downer College, spoke on "Facing America's Housing Problem", and Dr. Stephen M. Corey, University of Chicago, the luncheon speaker, on "A Layman Looks at Home Economics".

News from our Advertisers and Exhibitors. Ina S. Lindman, director, Home Economics Department, *Fruit Dispatch Company*, New York, has prepared one of the most ingeniously arranged collections of recipes yet seen. The cards are arranged on a metal binder so that they may be taken off and filed, others added, or the collection as assembled may be placed on the shelf and used as a complete little book. It will stand wear and tear for the flexible covers are waterproofed. The booklet is also thumb-indexed, and includes entrées, breads, cakes and cookies, desserts, beverages, and so on, all for the use of that increasingly popular fruit, the banana. Miss Lindman has included data on buying, care of fruit, tables of weights and measures, etc., in addition to her many popular recipes. The recipes are stated in two large quantity units and one suitable for family use.

Ralston Purina Company, St. Louis, Missouri, through its research laboratories under the direction of Dr. H. J. Smith, have available a folder suitable for filing containing a résumé of information on whole wheat and a complete collection of their booklets describing the several uses of the time-honored Ralston products in allergy and low-calorie diets.

Knox Gelatine Laboratories, Johnstown, New York, also have a collection of folders which include suggestions on feeding the sick, both young and old, the diabetic, and the other various uses of gelatine in infant feeding, reducing diets, etc. They, too, have a booklet of recipes giving innumerable recipes for the use of gelatine in desserts, candies, and so on.

Under the direction of Doris Tisdale, *Standard Brands, Inc.*, 691 Washington St., New York, have prepared for distribution a collection of recipes including cards and booklets and their famous Royal Cook Book. Of particular interest are the envelopes of cards for the making of such popular dishes as chiffon pie and other delicacies using products of this firm.

John Sexton & Company, manufacturing wholesale grocers of Chicago and Brooklyn, opened a distributing plant at Houston and Elm Streets, Dallas, on January 4, which will render a complete service to the hotels, restaurants, hospitals, schools, clubs and camps in the Southwest. The company controls a large portion of the merchandise it sells annually, through the importation of foods from all the producing countries in the world. It manufactures a vast assortment of preserves, jellies, mince-meat, gelatin dessert powder, salad dressings, pickles and relishes in the Sexton Sunshine Kitchens. The firm is the foremost distributor in America of No. 10 canned foods and handles a complete variety in this popular-sized container, adapted to the needs of all its patrons. Included in this line is the largest assortment offered, in No. 10 tins, of fruits and vegetable juices. The company is also an important distributor of paper goods and soaps, cleaners and detergents.

The Sunkist Research Staff of the *California Fruit Growers Exchange* have published the first number of *Nutrition Research* which includes much helpful information concerning vitamins C and P and their importance in normal nutrition and disease conditions.

If England can "take it", maybe part of the answer is that fine old custom of afternoon tea. The *Continental Coffee Company*, Chicago, has long ago discovered the advantages of a few minutes off for a steaming cup of tea or coffee. Promptly at 3:30 every afternoon uniformed

NEW DATA ON THE AVAILABILITY OF IRON IN MOLASSES

Chemical and biological assays prove more than 80% of abundant molasses-iron is assimilable

QUICK SUMMARY

RESULTS: New Orleans molasses, known to be one of the richest food sources of iron, has now been proven to contain iron of from 80% to 97% *availability.*

HOW TESTED: (A) Chemically and biologically[1]. (B) Clinically[2].

SUGGESTED USES: For child feeding where its high calorie value plus iron content make molasses a valuable dietary asset; and to provide extra iron during pregnancy.

AVAILABLE IRON CONTENT: 0.653 mgs. per tablespoon in Brer Rabbit Molasses — Gold Label grade. 1.078 mgs. per tablespoon in Brer Rabbit Molasses—Green Label grade.

SUGGESTED AMOUNT: Three or more tablespoonfuls daily. This may be taken plain, on bread, cereal, desserts or in milk. Physicians may vary the amount, depending on the iron need, age, condition and tolerance of the individual.

IN COMPARING iron-rich foods for the dietary it is helpful to know—besides total iron content—how much of this mineral is present in assimilable form.

To determine the availability of the iron content of NEW ORLEANS MOLASSES and to supply specific comparison with other food sources of iron, the makers of Brer Rabbit Molasses co-operated in carrying out chemical, biological and clinical research. A brief summary of results of the chemical and biological tests is reported here for the information of the medical profession.

THE MOLASSES USED IN ALL TESTS WAS BRER RABBIT NEW ORLEANS MOLASSES.

The chemical and biological tests[1] show availability of iron in Brer Rabbit Molasses to be over 90% in the Gold Label grade and in the Green Label grade over 80%.

Taste preferences for molasses differ. Brer Rabbit comes in two flavors to meet all requirements. If a dark, full-flavored molasses is desired, specify Green Label Brer Rabbit (Molasses "B" in table). If a light, mild-flavored molasses is wanted, specify Gold Label Brer Rabbit (Molasses "A" in table).

Because of its low cost and palatability, may we suggest that you recommend the use of Brer Rabbit New Orleans Molasses where a higher iron content in the dietary is desirable. Penick & Ford, Ltd., Inc., New Orleans, La.

TABLE[1]

	Total iron mg/100 gm	Per cent availability	Available iron mg/100 gm
MOLASSES "A"*	3.2	97	3.1
MOLASSES "B"**	6.0	85	5.1
BEEF LIVER	8.2	70	5.7
OATMEAL	4.8	96	4.6
APRICOTS (*dry*)	4.1	98	4.0
EGGS	3.1	100	3.1
WHEAT	5.0	47	2.4
RAISINS (*Muscat*)	3.0	62	1.9
PARSLEY	3.2	50	1.6
BEEF MUSCLE	3.0	50	1.5
OYSTERS	5.8	22	1.3
CABBAGE	1.8	72	1.3
MUTTON	5.1	24	1.2
LETTUCE	1.5	63	0.9
SPINACH	2.6	20	0.5

*Brer Rabbit—Gold Label **Brer Rabbit—Green Label

1. Am. J. Dig. Dis. Vol. VI, No. 7 (Sept.) pp. 459-62, 1939
2. Clinical research completed. Paper being prepared for publication. Reprints of these papers will be sent physicians and nurses on request.

ACCEPTED by AMERICAN MEDICAL ASSN Council on Foods

waitresses bring carts of hot coffee and tea to the offices and visitors and employees alike are served. According to executives of the firm, the country's largest importers and roasters of coffee and tea for restaurants and hotels, this tea-time custom results in increased efficiency and ability for the rest of the day.

Ruth Atwater, Home Economics Division, *National Canners Association*, Washington, D. C., has prepared an interesting booklet of luncheon and dinner menus, buffet suppers, and afternoon refreshments, for the entertaining of from four to twenty-five guests, available upon request.

Have You Heard?

(This month's contributions are from the members of the Massachusetts Dietetic Association, and were compiled by Ruth W. Spencer of Baker Memorial, Massachusetts General Hospital.)

The Boston Dispensary, a unit of the New England Medical Center, established the first Food Clinic in the United States in 1918. The Food Clinic teaches patients as well as the graduate and undergraduate students how to calculate vitamin and other food constituent values by means of visual education. A part of the sheet describing each vitamin is divided into sections about an inch square. Within each section appears a picture of a serving of a food which is a good source of the vitamin. With each picture is a statement of the number of vitamin units the serving contains. A blank space is left at the bottom of the sheet on which are typed the words: "Add up here". In this space the child or adult writes the amounts of the various foods he may have in a day, and beside each the number of units it contains, then adds up the figures and checks the total with the requirement for the day as stated on the sheet. Thus it is simply a matter of addition if he wishes to learn whether his meals are providing the number of units required for the day. It is much easier for the patient to visualize amounts of foods with pictures than from the figures in a table.

An easy way to make sure that hot beverages will remain so until they reach the patient, is to plug up the spout of each individual tea or coffee pot with a small, snugly fitting cork. This also prevents spilling on trays and a few delays in the kitchen or en route will not be so likely to mean tepid coffee.

Here's a tip for maintaining the frostiness of cold foods sent out from a central service kitchen. Place a small piece of dry ice in the cold compartment atop each food truck. Fruit juices, salads, cocktails, cold desserts and beverages may be placed above the heated compartments with no change in their temperature, for the dry ice will keep them cold.

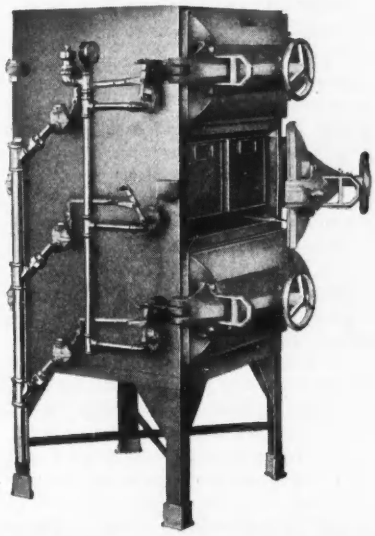
If you are planning refrigerators for prepared salads, tray slides built at the edge of the refrigerator walls and measured to take the size tray used are valuable in conserving space and eliminating the shelf and its cleaning problems. The trays can slide in lengthwise or crosswise, depending upon the width and depth of your usable space. Tall and large containers can be refrigerated in the same space when trays are not in use, as there are no shelves to be taken out or moved.

An electric serving table has individually-controlled heating units, so that various foods may be kept warm at different levels of temperature. You may have cream soup and stock soup on the same table, with the heat unit on the cream soup set lower to prevent curdling.

An electric food conveyor may answer a temporary need for an additional serving unit in an over-crowded cafeteria.

A new cheese is on the market—smoked American, produced by the California Cheese Company at Sebastopol, California. The flavor of this cheese is distinctive; it will remind you of ham, yet the texture is that of a Cheddar cheese. It is packaged in a round sausage-like roll and weighs between two and three pounds.

The supply of Roquefort cheese is practically exhausted. We have been looking around for a substitute and have discovered that Argentine Bleu cheese does very well. It is made from cow's instead of goat's milk. It is the same type



STEAM-CHEF

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With ALL The Features

● Built by specialists, STEAM-CHEF Steam Cookers are the result of many years of experience serving hundreds of hospitals and schools. The STEAM-CHEF includes ALL approved modern features of construction—long life, sanitation, easy cleaning, full floating doors, full automatic control. Use this saver of time, work and fuel in *your* kitchen. It's always ready for action—frees your range space for other purposes. For steaming at its best, be sure you have the most modern equipment—STEAM-CHEF Steamers!

Furnished in proper capacity for any requirements—operated by direct steam, gas or electricity. Full details from your jobber or from us.

THE CLEVELAND RANGE COMPANY
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Cleveland STEAM-CHEF for better cooking—STEAM

Save

TIME, SPACE and MONEY!

Institutions administering Vitamin C with V-C-B save TIME, by eliminating tiresome squeezing of fruit, SPACE, by doing away with bulky fruit storage bins, and MONEY, because of V-C-B's low cost per unit of Vitamin C.

At only one and 6/10ths cents per 50 mgm of Vitamin C, V-C-B effects a considerable saving over administering Vitamin C in any other form, including canned or fresh fruit juices—lightens the burden on your budget.

Dissolved in water according to directions, V-C-B produces a pleasant fruity beverage containing approximately 1000 International Units of Vitamin C and 50 calories per 4-oz liquid portion—the approximate equivalent of fresh orange juice in caloric value and Vitamin C potency.

V-C-B may also be used to increase the Vitamin C content of all fruit juices, and mixed with milk, ginger ale, or charged water as a refreshing beverage in Liquid Diets, Restricted Diets, High Carbohydrate Diets and Forcing Fluids.

Because of the economy and the time and space saving features of V-C-B, the Byrd Expedition took no other source of Vitamin C to Antarctica. For the same reasons many State Institutions have adopted V-C-B as a standard for administering Vitamin C.

Many of these institutions are saving thousands of dollars yearly with V-C-B. Similar savings can be brought about in your institution through use of V-C-B. Send for additional details and a 3½-oz sample can of V-C-B (makes one quart of Vitamin C Beverage) free of charge, NOW!

ACCEPTED AMERICAN MEDICAL ASSN

VITAMIN PRODUCTS DIVISION
HILKER AND BLETSCH COMPANY
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Please send, free of charge, 3½-ounce sample of V-C-B (makes 1 quart of Vitamin C Beverage).

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of cheese as Roquefort and while the flavor is not identical it makes a tasty salad dressing or may be served with crackers for dessert.

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Miscellaneous. Homogenized milk makes creamier soup and pudding, for there is no chance for the cook to pour off any cream.

Oatmeal and cracked wheat bread will be eaten by children who will not eat ordinary dark wheat bread.

Lemon juice added to the water in which you wash celery tops for use in seasoning will remove all trace of the spray used by the grower.

The new "Butternut Squash" that appeared on the market in small quantities this fall is excellent and of a different flavor and texture. Peel and cube, boil and season with plenty of butter, salt and pepper. It is similar to sweet potato.

"Hickory Salt" gives a fine "new" old-fashioned flavor to scrambled eggs.

Have you ever tried serving diced and sautéed mushrooms mixed with green peas? You will find this a pleasant combination.

There is a novel note current in smart restaurant fare. A cake, not unlike a ground nut cake in flavor, sponge cake and other pastries can be made from a "different" whole wheat flour with a truly delightful flavor. This new flour can be kept throughout the summer and it endures tropical heat without developing insects. The quality of wheat used and the pains taken in the new process of milling ensure high mineral and vitamin values. This flour is available from several Boston wholesale houses.

Yellow tomato juice served with frozen cubes of spiced red tomato juice makes a colorful and tasty cocktail.

Practical place cards can be made with shiny McIntosh apples. The name card can be stuck in with a colored toothpick. Serve cheese for dessert and eat the apple with it.

Apple pie will have a new flavor if grated orange rind is added to the sugar and the mixture is sprinkled over the apples in the usual way.

A new mildew-resistant melon has been developed. Its importance can be recognized when it is pointed out that mildew has ruined over thirty per cent of a crop. Imperial Valley, California, alone ships over 25,000 cars of cantaloupes annually.

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The Doctrine of Dietary Laissez-faire

Attempts to change eating habits, like attempts to change any established human practices, are bound to meet vigorous opposition. Frequently such opposition grounds itself on the belief that animals (including human beings) instinctively know what is best for them and that, if left to their own devices, they exercise a wise selection of the foods they need. This doctrine of dietary *laissez-faire* also has a familiar variant: our forefathers, who did not perplex themselves with questions of diet, ate well and achieved mightily; and what was good enough for them ought to be good enough for us. But how well does either square with the facts?—*Borsook, Henry: Vitamins, What They Are and How They Can Benefit You, The Viking Press, New York, 1940.*

PEPTIC ULCER

benefited by

KNOX GELATINE *(U.S.P.)*

The effectiveness of utilizing plain Knox Gelatine in treatment of peptic ulcer has recently been reported.* In a group of forty patients, 36 (or 90%) were symptomatically improved; 28 of these (or 70%) experienced immediate relief of all symptoms. Other than dietary regulation which included frequent feedings of plain Knox Gelatine, no medication was given except an occasional cathartic.

This simple food regimen has the advantage of eliminating "alkalosis hazard" and is credited with "more prolonged neutralization of the gastric juice."

PLAIN *(Sparkling)* KNOX GELATINE (U.S.P.) was used in this study.

PEPTIC ULCER FORMULA. Empty one envelope Knox Gelatine in a glass three-quarters filled with cold water or milk. Let the liquid moisten the gelatine. Then stir briskly and drink immediately before it thickens. Take hourly between feedings for seven doses a day.

KNOX GELATINE

IS PURE GELATINE—NEUTRAL

NO SUGAR

SEND THIS COUPON FOR FREE REPRINT

* **"PEPTIC ULCER**—The Effect of High Protein Diet on the Behavior of the Disease" by Windwer and Matzner, Am. Jl. Dig. Dis. 5:743, 1939.

KNOX GELATINE
Johnstown, N.Y., Dept. 466
Please send me above reprint.

*Name*_____

*Address*_____

WHO'S WHO IN THIS ISSUE

Helen S. Mitchell, research professor in nutrition at Massachusetts State College, received the Ph.D. degree under the late Professor Lafayette Mendel at Yale University, following her graduation from Mt. Holyoke. At present she is chairman of the Journal Board of the American Dietetic Association and for two years was chairman of the Professional Education Section. Dr. Mitchell has done distinguished work in the field of nutrition research, notably in connection with the subject she discusses in this issue. At present she is on temporary and part-time leave as nutrition consultant in the Bureau of Home Economics, Washington, D. C., working on projects and committees concerned with the national nutrition program in its relation to the nutrition of the entire civilian population.

Bertha Shapley Burke, B.A., Vassar College, M.A., Columbia University, was formerly an instructor in chemistry at Vassar College and for several years special instructor in nutrition at Simmons College. For many years she has been interested in community work in nutrition. Since 1932 Mrs. Burke has been in charge of the nutrition studies being carried on at the Harvard School of Public Health, Center for Research in Child Health and Development. She is also instructor in nutrition, Department of Child Hygiene, Harvard School of Public Health, Boston.

Constance C. Hart, B.S., Columbia University, is director of School Lunchrooms, Rochester, New York, and formerly served in the same capacity in Cleveland. She is editor of *School Management's* School Lunch and Cafeteria Department, and author of *Recipes at Moderate Cost*. Miss Hart was general chairman of the Conference of Food Service Directors for 1939 and 1940 and is a member of the Executive Committee for 1941. She was chairman of the Joint Committee of the American Dietetic Association and American Home Economics Association on School Lunches, and chairman of the A. D. A. Committee on Methods of Food Service in Large School Cafeterias. Miss Hart has been a contributor to this JOURNAL, the *Journal of Home Economics, Nation's Schools* and *Practical Home Economics*.

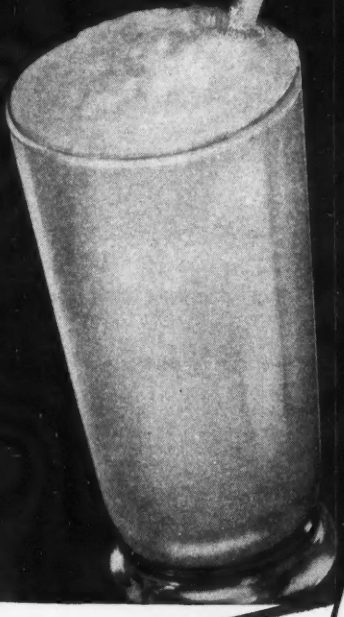
Maurice L. Blatt, M.D., Sc.D., is professor of diseases of children, University of Illinois College of Medicine, attending pediatrician and head, Division of Diseases of Children, Cook County Hospital, member of the Academy of Pediatrics, and licentiate of the American Board of Pediatrics. His special interests have been in the development and organization of the Children's Division of the Cook County Hospital and for many years he has devoted much time to the clinical investigation of infants' foods and the care of the premature infant. **Mary Zeldes,** M.S., M.D., University of Illinois College of Medicine, is a practicing pediatrician associated with Dr. Blatt. During the past year Dr. Zeldes has devoted considerable time to the study of the alveolar lining of the lung in relation to viability of the fetus. She received the M.S. degree in pathology from the University of Illinois for this work.

Aubyn Chinn, midwest director of consumer relations for The Borden Company, is a graduate of the University of Kentucky where she was formerly associate professor of home economics. Miss Chinn was also an extension worker in Kentucky and with the U. S. Department of Agriculture, Washington, and for many years health education director of the National Dairy Council. **Grace Mary Gustafson,** B.S., Kansas State College, is with the Consumer Relations Department, The Borden Company, Midwest Division.

Gladys E. Vail is associate professor of food economics and nutrition at Kansas State College. She received her Ph.D. degree from the University of Minnesota where she majored in biochemistry and foods and minored in food technology. **Edith Ames** received the B.S. and M.S. degrees from Kansas State College. She has had several years experience in the Indian Service in the Southwest where she became interested in the problem of adequate diets at

DRINK A RIPE BANANA IN

Banana Milk Shake



SOMETHING NEW for liquid-diet patients, a quick pick-up for busy doctors or an active staff! Banana Milk Shakes are quickly and easily prepared, easy to digest and supply quick food energy.

Bananas contain Vitamins A, B_1, C and G, and essential minerals. Combined with milk, bananas make an almost completely balanced ration. The secret of a full, satisfying mellow flavor and easy digestibility in a Banana Milk Shake lies in using fully ripe bananas . . . yellow peel flecked with brown.

HERE'S HOW

BANANA MILK SHAKE

1 fully ripe banana* 1 cup COLD milk

**Use fully ripe banana . . . peel well flecked with brown*

Peel banana. Slice into a bowl and beat with electric mixer or rotary egg beater until smooth and creamy. Add milk and mix thoroughly. Serve COLD. Makes a 10 to 12 ounce drink.

NOTE: If electric drink mixer, which crushes fruit while mixing, is used, break banana into mixer cup, add milk and mix.

Add ice cream before mixing, if desired.

Banana Milk Shake is only one of the many new uses for Bananas.

FREE! NEW SET OF 50 BANANA RECIPES

Fruit Dispatch Company, Home Economics Dept.
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Please send me free your new set of tested banana recipes and suggestions in quantity proportions printed on handy 4 x 6 file cards.

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UNITED FRUIT BANANAS *distributed by* **FRUIT DISPATCH CO.**

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low cost. She is at present a member of the staff at Winthrop College, Rockhill, South Carolina.

Harold H. Williams is assistant director, Research Laboratory, Children's Fund of Michigan, Detroit. He received his B.S. degree in agricultural and biological chemistry at Pennsylvania State College and the Ph.D. degree in animal nutrition at Cornell University. Dr. Williams was Sterling Fellow in Physiological Chemistry, Yale University, 1933–35. **Icie G. Macy,** Ph.D., in private life Mrs. B. B. Hoobler, was noted under this section for March 1940.

Pros and Cons of Dietary Adequacy

The next great public health undertaking will be an attack on chronic ill health, the result of poor nutrition. The whole problem, from the viewpoint of tactics, can be stated in terms of providing enough vitamins. If enough of these are provided from natural sources, all the other elements necessary to a good diet will be provided automatically.

One of the obstacles in educating the public to a richer vitamin diet is the opinion held in some medical circles that any mixed diet contains an adequate supply of vitamins. This opinion is correct or incorrect according to what is meant by "adequate".

The early work on vitamins emphasized how small the necessary amounts of vitamin are, when those amounts are expressed in pounds or ounces. It was also found that nearly all animal and plant tissues contain some vitamins; otherwise, they could not have lived. And so it was concluded that we in the United States obtain enough of the vitamins.

"Enough" for what? Enough to prevent severe deficiency diseases such as Xerophthalmia and beri-beri? Yes. Enough to prevent rickets and poor dental health? No. To prevent defective vision in dim light in at least 5 to 10 per cent of the population? No. To prevent constipation and gastro-intestinal ill health in an even larger percentage of adults? No.—*Borsook, H.: Vitamins: What They Are and How They Can Benefit You, New York: The Viking Press, 1940.*